REPAIR MANUAL

PARTS LIST

FOR

FUJICA AX-1

FUJI FILM

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I TROUBLESHOOTING

1. Film advance lever cannot be turned.

Remove the bottom cover assembly (2 - 70), and see if the shutter blinds run or not.

a. The shutter blinds run.

- The notched gear (5 - 67) is in collision with the clutch gear (5 -122).
- The release lever (5 - 99) is not released by the cam plate (5 - 83). (In this case, the mirror does not come down.)

b. The shutter blinds do not run.

Is the electrical circuit operating sequentially?
(Select a proper brightness so that shutter speed is 1/4 or 1/2 sec. at AE mode, release the shutter, and see if the LED in the viewfinder goes out for 1/4 or 1/2 sec. When the LED goes out for the time of shutter speed, the electrical circuit is operating sequentially.)

YES

Apply DC 2.5V across lead wires (7-23 and 7-24) of the ML magnet assembly (4 - 65), and see if the ML magnet operates or not.

- The ML magnet assembly operates — The lead wire between the M- circuit board assembly (2-64) and amplifier assembly (2-13) is defective.
- The ML magnet assembly does not operate
  - The coil is broken or short - circuited.
  - The quick return mechanism releasing system (engagement between lever (4-85) and assembly (4 - 90) is defective.

NO

Repair the electrical circuit.

2. The film advance lever can be turned but the shutter cannot be charged.

   Wind up the film advance lever and see if the aperture lever (4 - 56) and mirror (4 - 8) moves or not.

   a. The lever (4-56) and mirror (4 - 8) move as the film advance lever is wound up.
      - Insufficient attracting force of the ML magnet (4-65).
      - Improper operation of the lever (4 - 15) or improper hook shape.

   b. The lever (4 - 56) and mirror (4 - 8) do not move but the shutter still cannot be charged
      - o The magnet assembly (5-73) does not stop the shutter blinds.
      - o The quick return charge lever assembly (4 - 90) has been released continuously by the release lever (5 - 99).
      - o The lever (4-85) does not engage with the quick return charge lever assembly (4 -90).

3. The mirror does not come down

   The cam plate (5-83) does not kick the release lever (5 - 99) to release the quick return charge lever assembly (4-90).

4. The mirror does not rise
   - o Apply DC 2.5V across lead wires (7 - 23 and 7 - 24) of the ML magnet assembly (4 -65), and see if the ML magnet operates or not.
     - **YES** The lead wire between the M - circuit board assembly (2 - 64) and amplifier assembly (2 -13) is defective.
     - **NO** The coil is broken or short - circuited.
   - o Disengaged mirror kick - up system.

5. LED does not light.

   Refer to 16 -(1) and check the electrical circuit.

6. LED does not operate.

   Refer to 16-(2) and check the electrical circuit.

T. Bulb (8) operation of the shutter is faulty.
   - o Refer to 16 - (3) and check the electrical circuit.
   - o β magnet of the magnet assembly (5 - 73) does not stop the shutter blind.

8. AE lock does not work correctly.

   Refer to 16-(4) and check the electrical circuit.

9. With Fujica Auto Strobo mounted and the camera set to AE, shutter speed is not set to 1/60 sec. automatically or with the shutter speed dial set to "60x", 1/60 sec. is not provided.

   Refer to 16 - (5) and check the electrical circuit.

10. Self - timer does not work correctly.

    Refer to 16 - (6) and check the electrical circuit.

11. Battery check system does not work correctly.

    Refer to 16 - (7) and check the electrical circuit.

12. Correct shutter speed is not provided.

    Readjust the magnet assembly (5- 73).

    Refer to 16 - (8) and check the electrical circuit.

13. LED display in the viewfinder does not work correctly.

    Refer to 16-(10) and check the electrical circuit.

II DISASSEMBLY

1. Top cover assembly (1 -1)

a. Remove the FUJICA name plate (1 - 68).

b. Turn the film rewind crank assembly (1 - 64) counterclockwise, and remove it from the rewind spindle (6 - 111).

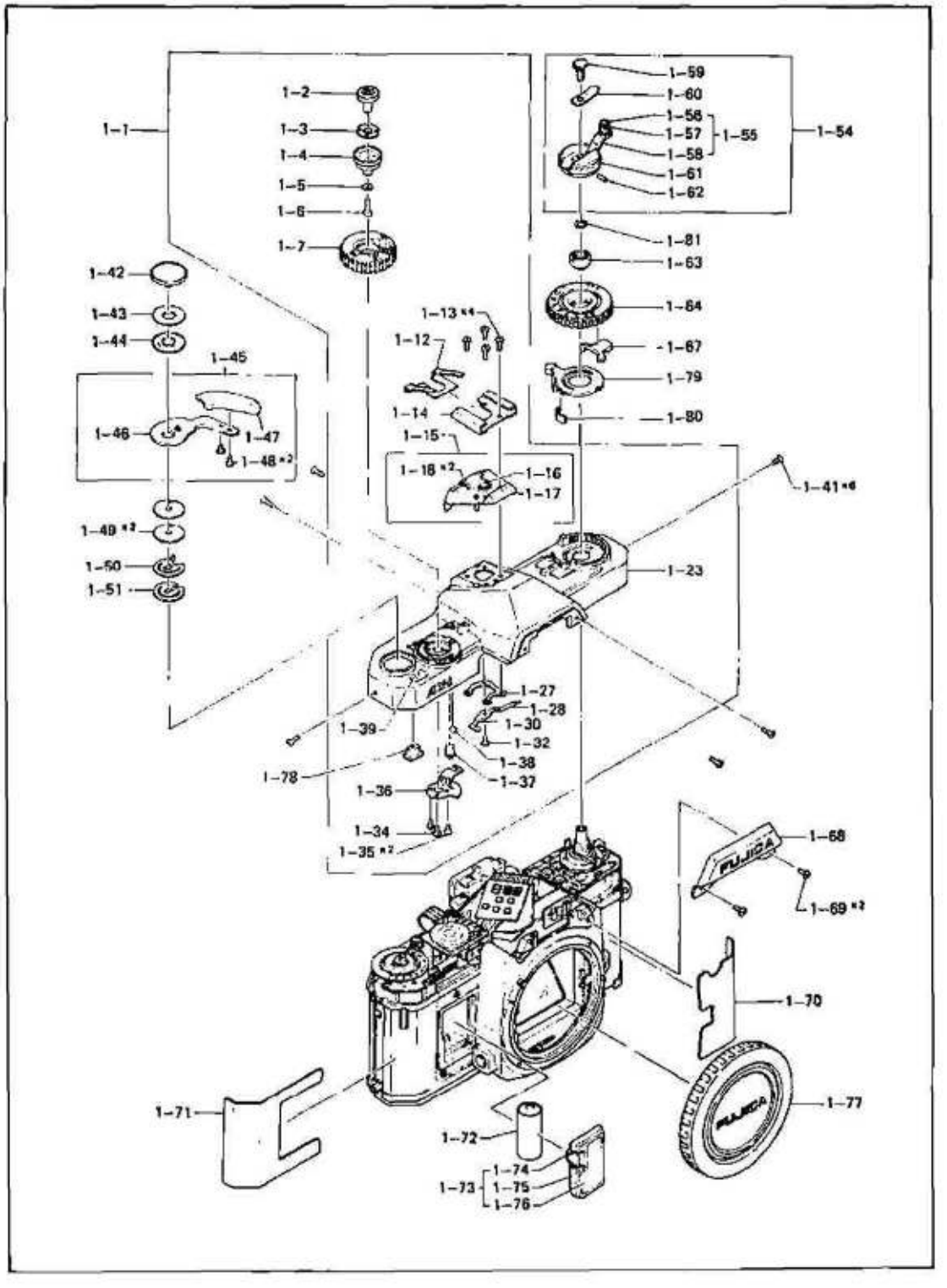
c. Remove the holder (1-63), and remove the film speed selector dial (1-64) and self - timer set lever (1 - 79).

d. Turn the screw (1 - 42) counterclockwise, and remove the film advance lever assembly (1 - 45).

e. Remove six screws (1-41).

f. Remove the top cover assembly carefully so that the film rewind button (1 - 78) and connecting shaft (1-6) will not be dropped off.

Fig. 1


1-1
1-2
1-3
1-4
1-5
1-6
1-7
1-42
1-43
1-44
1-45
1-46
1-47
1-48 *2
1-49 *2
1-50
1-51
1-59
1-60
1-56
1-57
1-58
1-55
1-54
1-61
1-62
1-81
1-63
1-64
1-13 *4
1-12
1-67
1-79
1-14
1-80
1-15
1-18 *2
1-16
1-17
1-41 *6
1-23
1-27
1-28
1-30
1-32
1-39
1-38
1-78
1-37
1-36
1-34
1-35 *2
1-68
FUJICA
1-69 *2
1-70
1-71
1-77
1-72
1-73
1-74
1-75
1-76

2. Focusing screen (2 - 33)

a. Remove two screws (2 - 26) from the lens mount side carefully so that the nuts (2-27) will not be dropped off.

b. Remove the cover plate (2 - 24), and pull out the focusing screen (2 - 33).

NOTE: When installing a focusing screen, hook it on the leaf spring (2 - 34), and hold down the front side of the focusing screen with the cover plate (2-24),

3. Amplifier assembly (2 - 13)

a. Remove two screws (2 - 9), and remove the channel plate B (2 -10) and rubber cushion (2 -11).

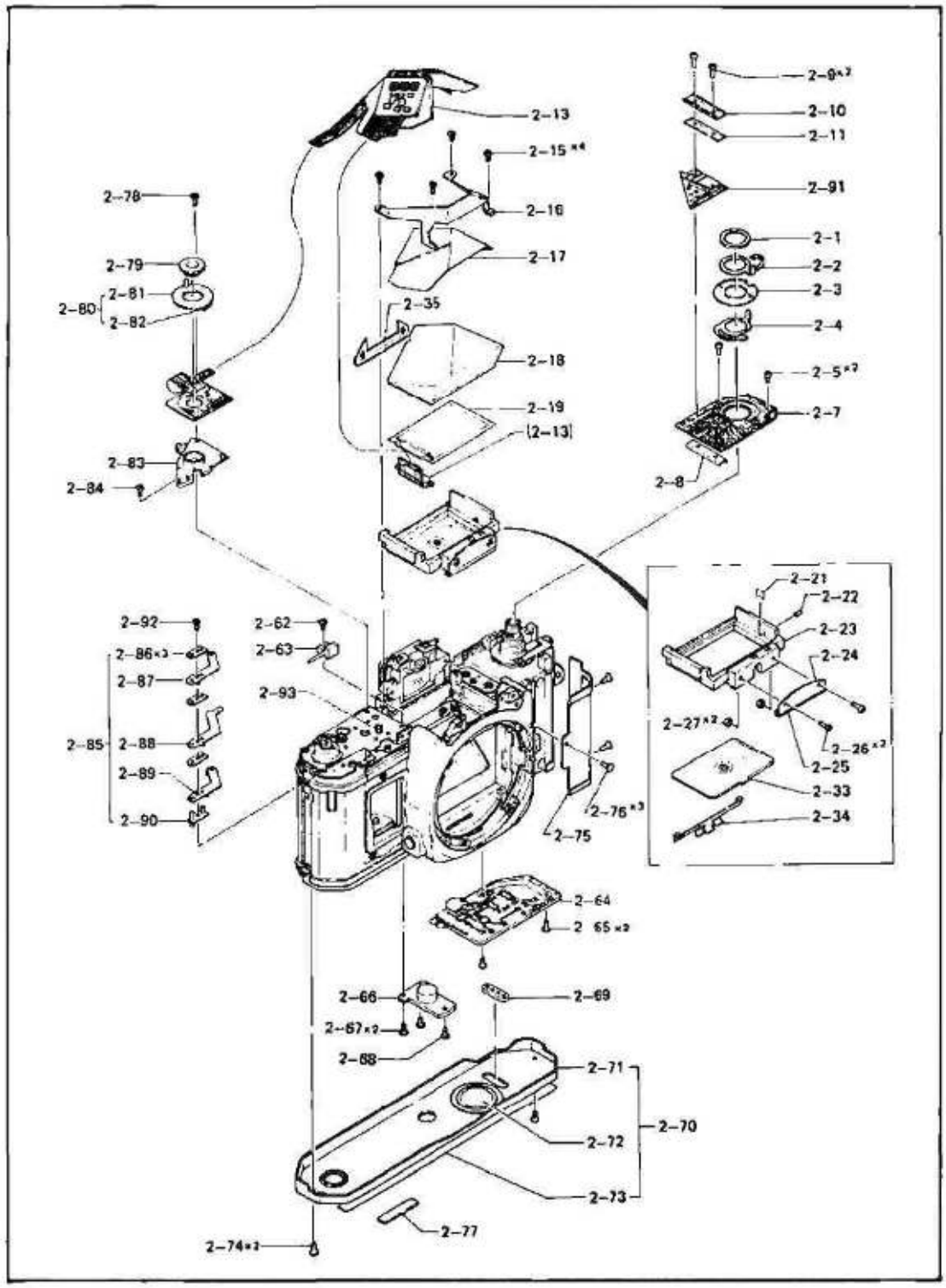
b. Remove the holder (2 - 79) by pulling it.

c. Remove the screw (2 - 78), and remove the printed circuit board (110B2806100).

d. Remove four screws (2 - 15).

e. Take out the amplifier assembly (2 -13) together with the prism case assembly (2 - 20).

Fig. 2


2-13
2-15 ×4
2-16
2-17
2-35
2-18
2-19
(2-13)
2-78
2-79
2-81
2-80
2-82
2-83
2-84
2-9 ×2
2-10
2-11
2-91
2-1
2-2
2-3
2-4
2-5 ×2
2-7
2-8
2-21
2-22
2-23
2-24
2-27 ×2
2-26 ×2
2-25
2-33
2-34
2-92
2-86 ×3
2-87
2-85
2-88
2-89
2-90
2-62
2-63
2-93
2-76 ×3
2-75
2-64
2-65 ×2
2-66
2-67 ×2
2-68
2-69
2-71
2-72
2-70
2-73
2-77
2-74 ×2

4. Lens mount base assembly (3-54)

a. Remove the amplifier assembly (2 -13),

b. Remove four screws (3 - 50).

c. Disconnect lead wires (7-23 and 7-24) extended from the M-circuit board assembly (2-64), and remove the lens mount base assembly.

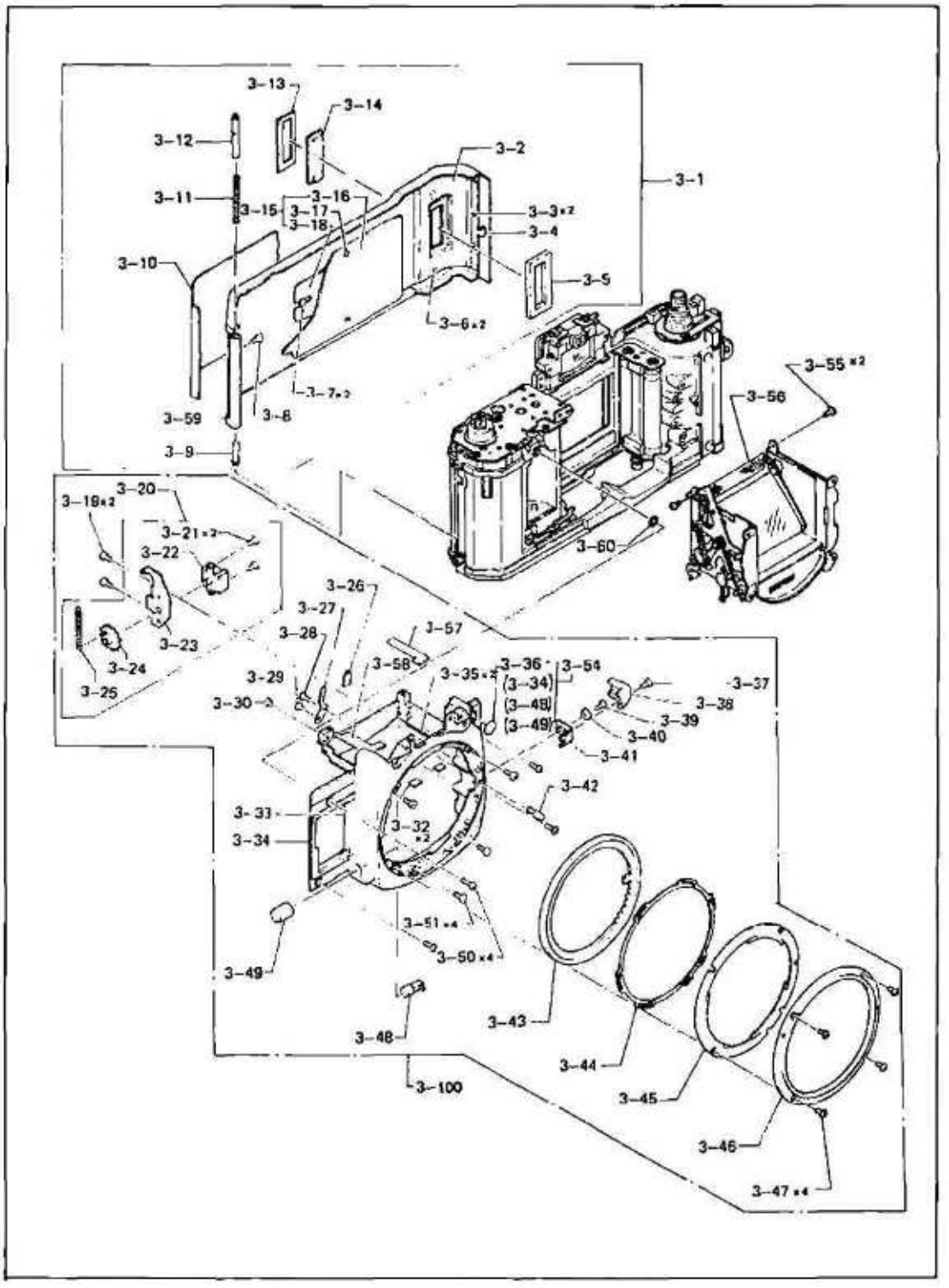
5. Mirror case assembly (4-10)

a. Remove four screws (3 - 47), and disassemble the lens mount base assembly (3 - 54).

b. Remove four screws (3 - 51).

c. Remove two screws (3 - 55), and remove the mirror case assembly.

Fig. 3


3-13
3-14
3-12
3-2
3-1
3-11
3-15
3-16
3-17
3-18
3-3×2
3-4
3-10
3-5
3-6×2
3-55×2
3-56
3-59
3-8
3-9
3-60
3-19×2
3-20
3-21×2
3-22
3-23
3-24
3-25
3-26
3-27
3-28
3-57
3-58
3-29
3-30
3-35×2
3-36
(3-34)
(3-48)
(3-49)
3-54
3-37
3-38
3-39
3-40
3-41
3-42
3-31
3-32×2
3-34
3-51×4
3-50×4
3-49
3-48
3-100
3-43
3-44
3-45
3-46
3-47×4

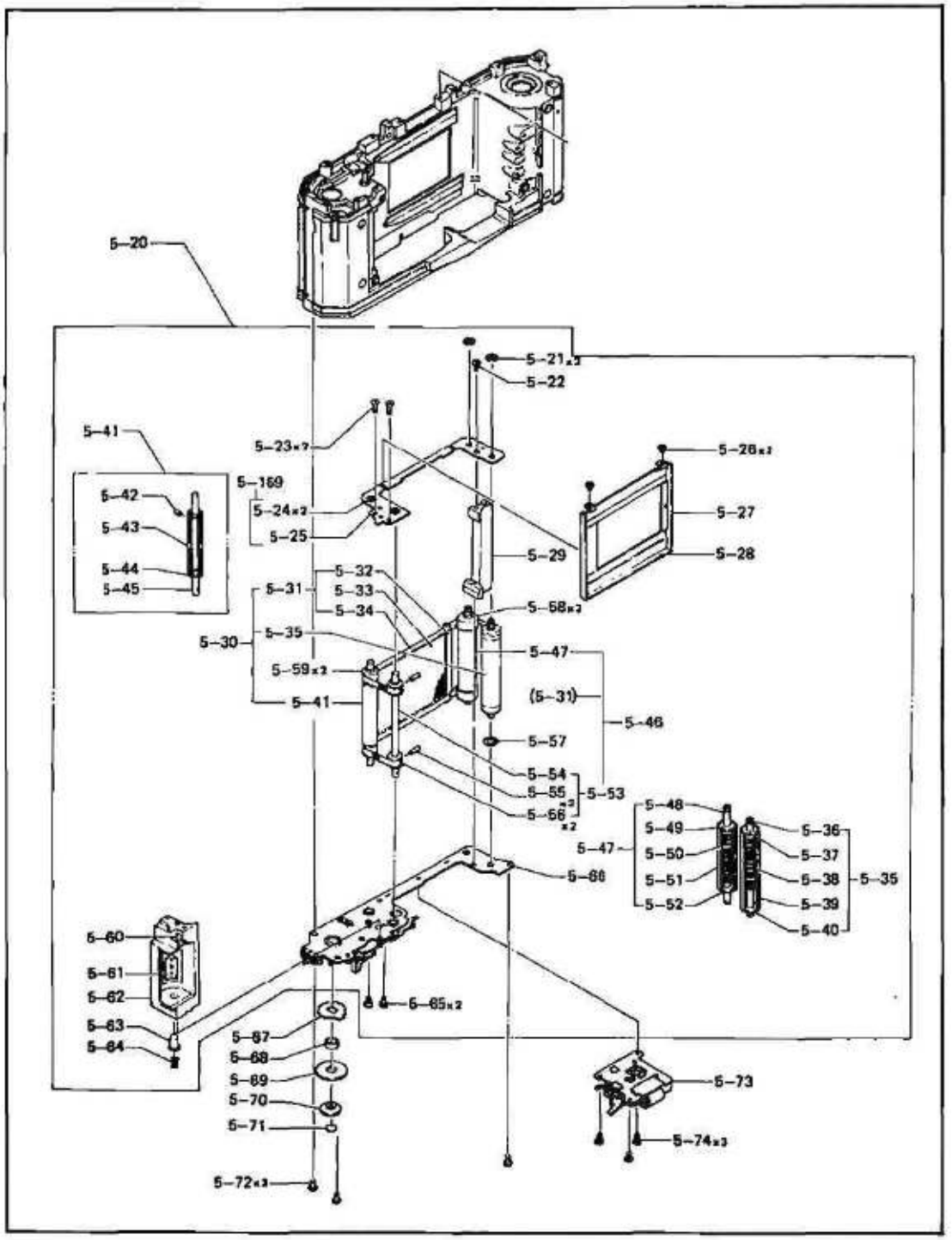
6. Focal plane shutter assembly (5 - 20)

a. Remove the clutch (6-70) and other auto-winder relative parts by turning the clutch clockwise.

b. Remove three screws (5 - 72).

c. Remove the focal plane shutter assembly (5 - 20) from the camera body.

Fig. 4


5-20
5-21x2
5-22
5-41
5-23x2
5-26x2
5-169
5-42
5-24x2
5-27
5-43
5-25
5-28
5-44
5-29
5-45
5-32
5-31
5-33
5-58x2
5-34
5-30
5-35
5-47
5-59x2
(5-31)
5-46
5-41
5-57
5-54
5-55
5-53
5-56x2
5-48
5-49
5-36
5-47
5-50
5-37
5-51
5-38
5-35
5-52
5-39
5-40
5-66
5-60
5-61
5-62
5-65x2
5-63
5-64
5-67
5-68
5-73
5-69
5-70
5-74x3
5-71
5-72x3

III REASSEMBLY, REPAIR AND ADJUSTMENT

1. Reassembly and adjustment of parts relative to the camera body

1 -1 Film chamber door lock

a. Check the pin (6 -102) to insure that it is caulked on the camera body (6 - 88) securely.

b. Check the lock plate (€-106) to insure that it has been installed securely with two screws (6 -10&).
Make sure that two square openings on the lock plate (6 -106) with which the lock plate is guided are properly lubricated with Helicolube - Molycote mixed grease.

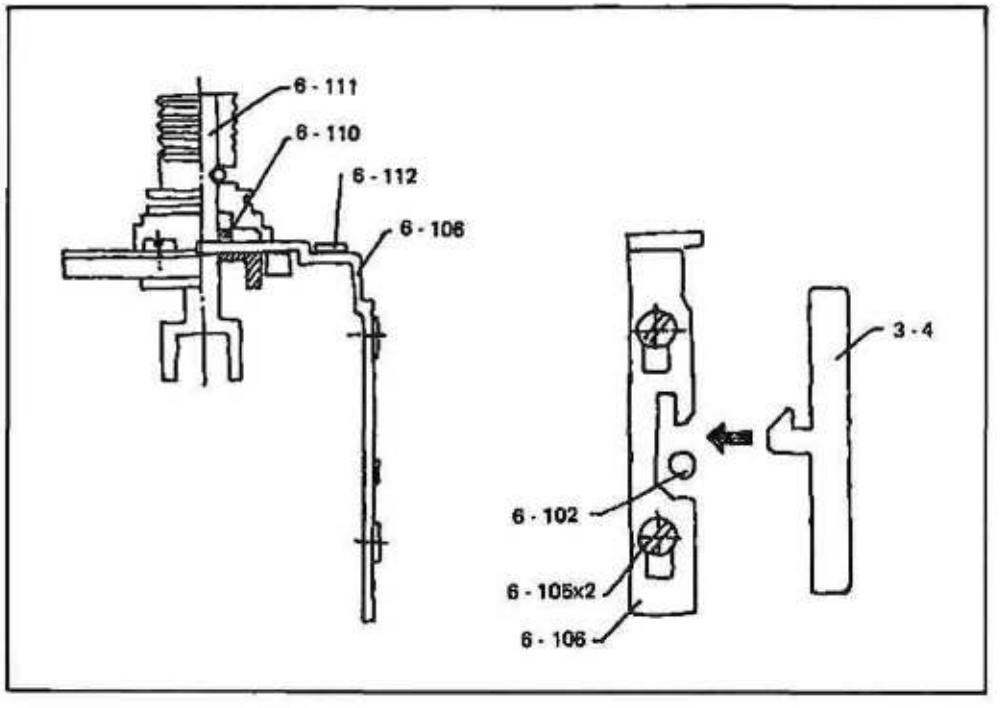
c. Check the leaf spring (6-112) and lock plate (6 -106) to insure that their contact surfaces are lubricated properly with Helicolube - Molycote mixed grease.

d. Check the lock plate (6 -106) to insure that the head of the lock plate is on the step of the light shielding barrel (6 - 110).

e. Pull the rewind spindle (6-111), and make sure that the lock plate (6-106) moves smoothly.

f. Check the hook plate (3-4) of the film chamber door to insure that it is correctly guided by the pin (6 -102) so that the film chamber door engages with the lock plate (6 -106) smoothly with a snap without deforming the film chamber door.

Fig. 5



1 - 2 Friction of take - up spool

a. The rated friction is 220 to 300 grams.
To check friction, wind a piece of string around the spool (6-93), turn the film advance lever and measure actually effective torque at the tame when the spool slips.

b. To adjust friction, adjust bent diameter of the friction ring (6 - 91).

c. Apply Losoid grease 72510 between the friction plate (6 - 91) and collar (6 - 92).

d. Make sure that the spool turns toward both the forward and backward directions.

NOTE: Spool becomes abnormally heavy when the collar (6-76) of the take - up spindle assembly (6-74) is not positioned correctly with the collar (6-76) assembled with the friction plate (6-91).

1-3 Friction of rewind spindle assembly (6 -107)

a. The rated friction is 10 to 60 gr - cm. When adjustment is required, properly change shape of the click spring (6 - 108).

b. When installing the friction spring (6 -108), be careful not to deform it.

c. Apply Losoid grease 72510 to the sliding surface and groove of the rewind spindle (6-111).

Fig. 6

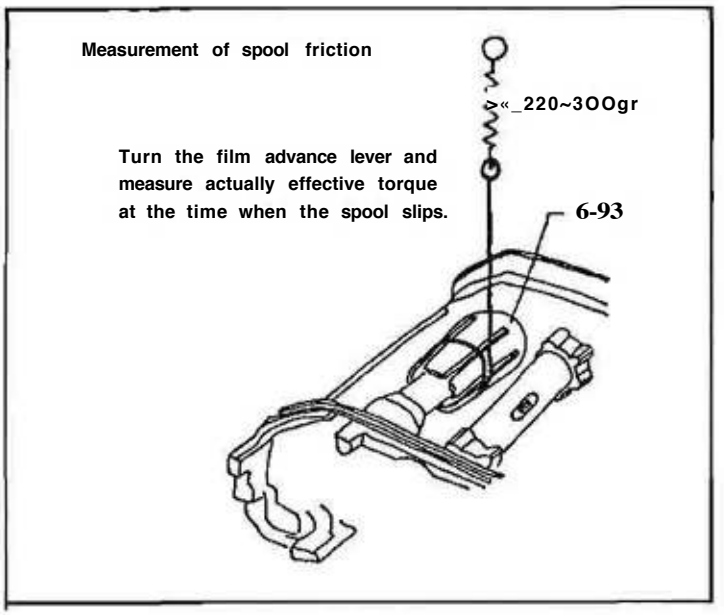

Measurement of spool friction
«_220~3OOgr
Turn the film advance lever and measure actually effective torque at the time when the spool slips.
6-93

Fig. 7

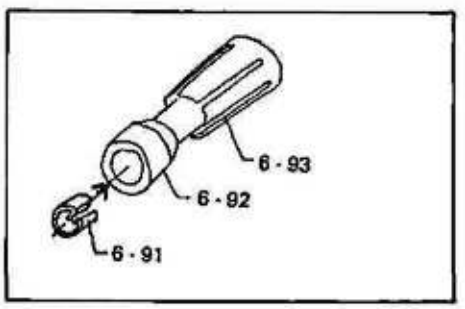


Fig. 8

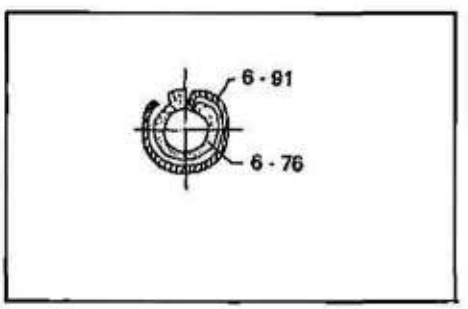
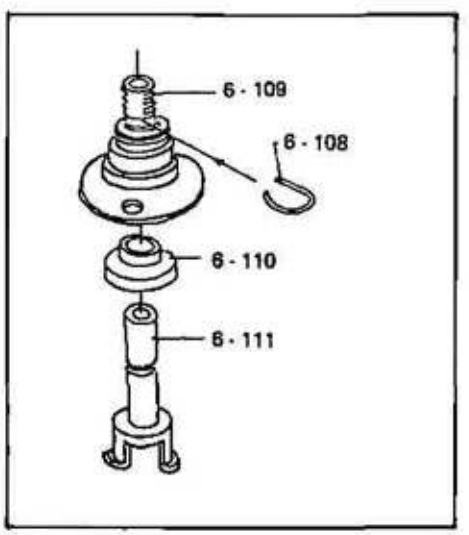


Fig. 9



1 - 4 Installing neck strap eyelets (6 -103)

Fit the two neck strap eyelets (6 -103) into the camera body (6 - 88), and install them securely with two screws (6 -104) after applying Araldite to the screws.

1 - 5 Installing shaft (6 - 84)

Apply Araldite to the threaded portion of the shaft (6 - 84), and screw the shaft into the camera body (6 - 88) correctly.

1-6 Sprocket (6-79)

a. Check the sprocket shaft assembly (6 - 80) to insure that it is operated smoothly by the spring (6 - 96).

b. Check the screw (6 - 78) to insure that it is securely tightened.

NOTE: Be sure to tighten the screw at the side where a spot facing has been made on the sprocket shaft (6-82).

c. Description for operation of film advance system at. the time of multiple exposures

When the sprocket shaft assembly (6 - 80) is pushed down hard (in other words, when the film rewind button (1 - 78) is pushed down deeply), the pin (6-81) comes into contact with the main body of the sprocket shaft assembly (6 - 80). Thus, the sprocket shaft assembly (6 - 80) no longer rotates. For this reason, when the film advance lever is wound up with the film rewind button (1-78) pushed deeply, the sprocket (6 - 79) does not rotate but the shutter is charged. Consequently, both the film and exposure counter are not advanced, permitting the camera to make a duplicated exposure on the same picture frame.

NOTE: When depth of the hole on the dicast body is excessive, the sprocket will not be stopped even if the film rewind button is pushed from the outside of the top cover.

Fig. 10

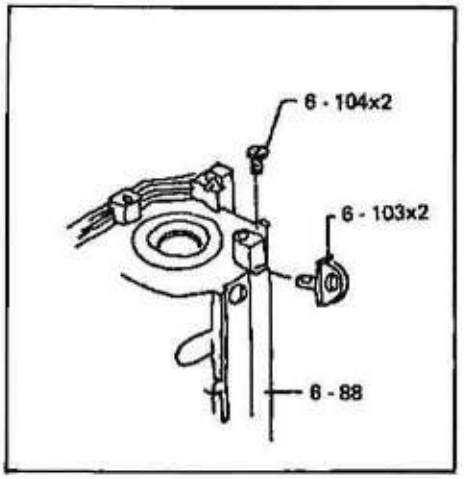


Fig. 11

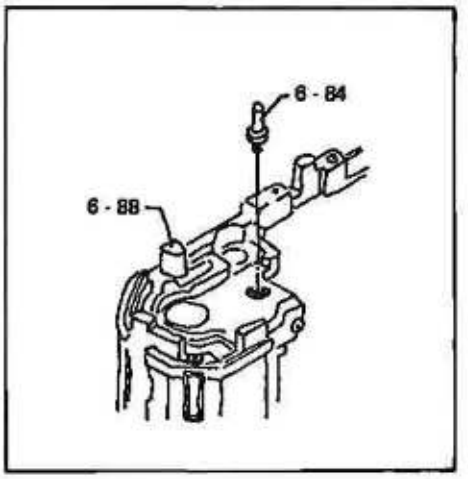
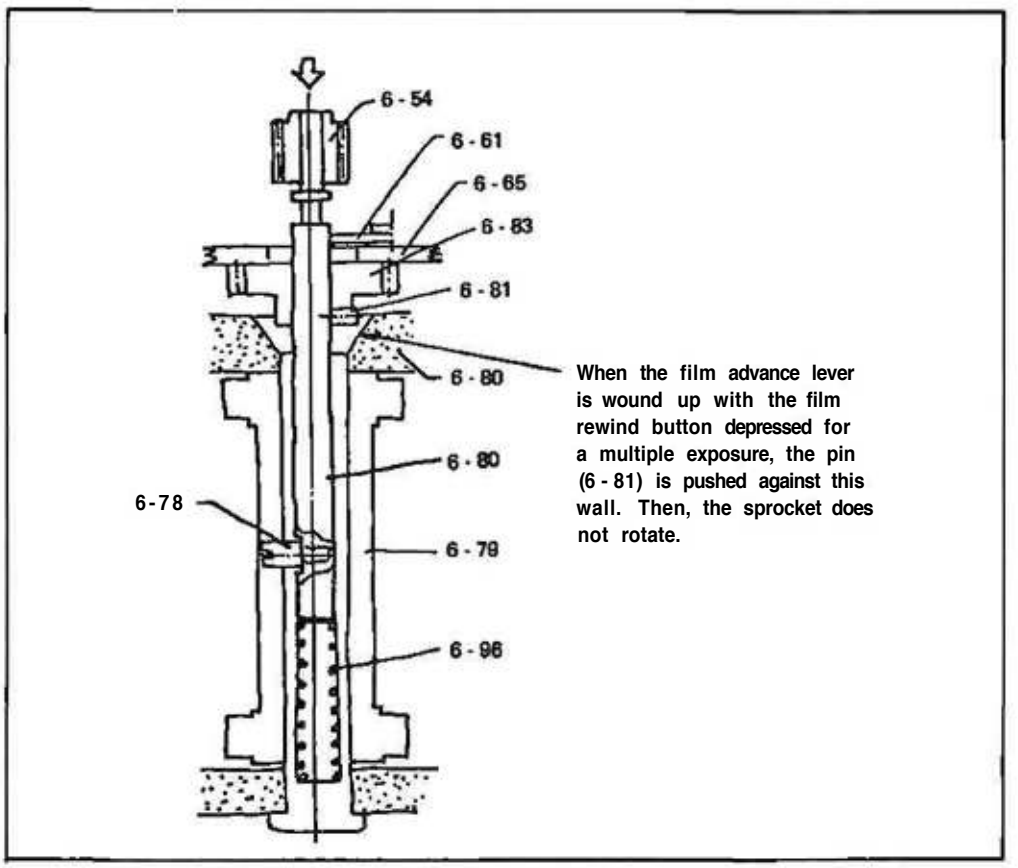


Fig. 12


6 - 54
6 - 61
6 - 65
6 - 83
6 - 81
6 - 80
6 - 80
6-78
6 - 79
6 - 96
When the film advance lever is wound up with the film rewind button depressed for a multiple exposure, the pin (6 - 81) is pushed against this wall. Then, the sprocket does not rotate.

1-7 Installing base plate assembly (6 - 58)

a. Apply Helicolube - Molycote mixed grease to the gear and shaft holding parts.

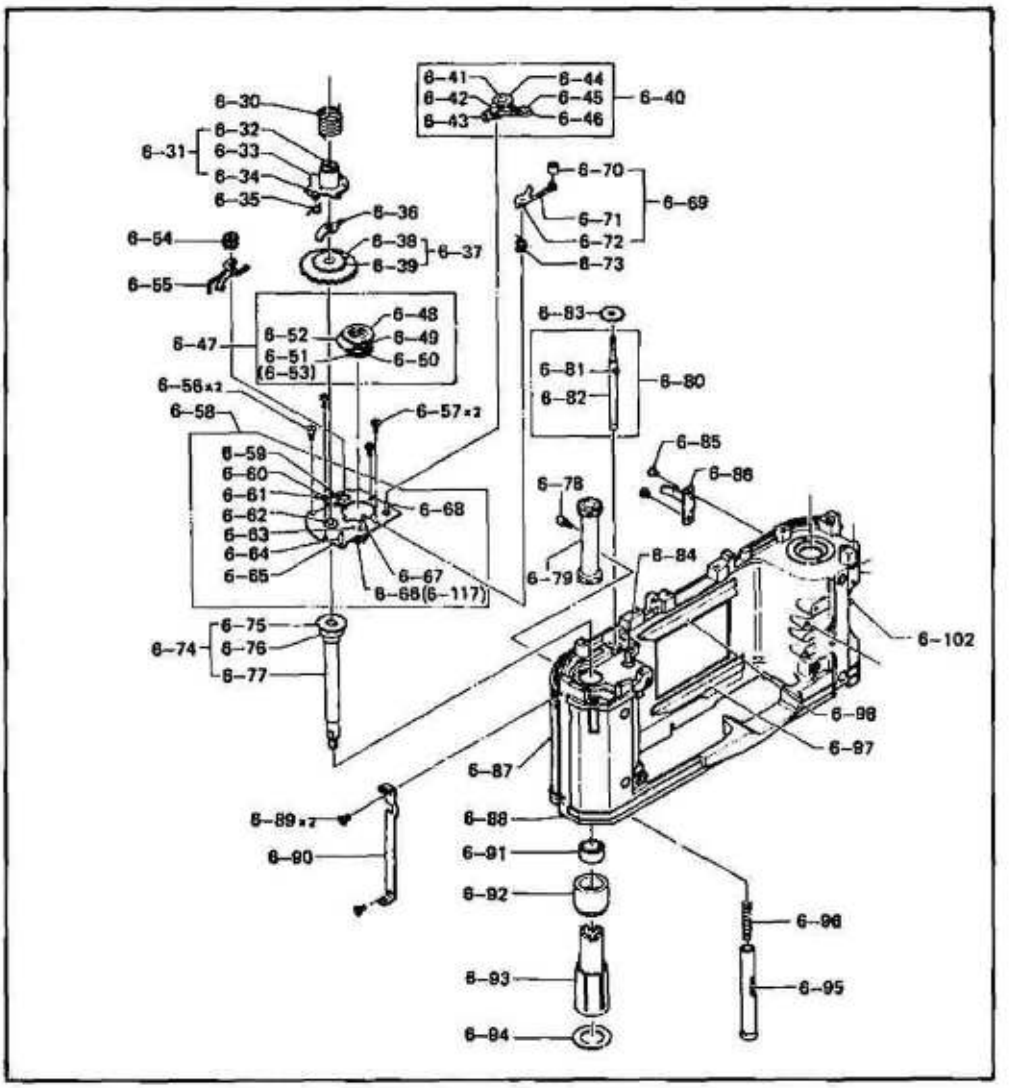
b. Install the lever (6-61) by matching its direction so that a locking can be attained when the sprocket shaft assembly (6 - 80) is pushed down.

c. Match the positioning pin (6 - 64) and other parts which are projected out from the base plate (6 - 65) to the appropriate holes on the camera body (6 - 88).

NOTE: 1. When the base plate (6-65) is installed, it should not have been floated. If the base plate is floated, the pin (6-81) of the sprocket shaft assembly (6 - 80) does not engage with the gear (6-83) sufficiently, and the pin may disengage with the gear when advancing film.

2. Those manufactured during the initial manufacturing period may use a washer to hold the gear (6-83) on the camera body and shape of long hole on the sprocket (6-79) may differ from that on the recently manufactured sprockets. These are to prevent idling of the sprocket.

Fig. 13


6-30
6-31
6-32
6-33
6-34
6-35
6-36
6-37
6-38
6-39
6-40
6-41
6-42
6-43
6-44
6-45
6-46
6-47
6-48
6-49
6-50
6-51
(6-53)
6-52
6-54
6-55
6-56×2
6-57×2
6-58
6-59
6-60
6-61
6-62
6-63
6-64
6-65
6-66(6-117)
6-67
6-68
6-69
6-70
6-71
6-72
6-73
6-74
6-75
6-76
6-77
6-78
6-79
6-80
6-81
6-82
6-83
6-84
6-85
6-86
6-87
6-88
6-89×2
6-90
6-91
6-92
6-93
6-94
6-95
6-96
6-97
6-98
6-102

1-8 Gear assembly (6 - 47) and perforation positioning control

a. Gear assembly (6-47)

- o Check the cam plate (6-52) and stopper (6-48) to insure that they are combined and positioned as shown in the right hand figure.
- o Check the lever (6-51) to insure that it is provided with a proper friction by the leaf spring (6 - 53).
- o Note that if friction of the lever (6-51) is insufficient, the sprocket will rotate reversely as the film advance lever is wound up Little by little (so called inching) and the shutter blinds will return greatly.
- o Note that if friction of the lever (6-51) is excessive, the film advance lever will not be turned smoothly.

b. Installation of gear assembly (6-47) for controlling position of film perforation.

- o Combine the take-up spindle assembly (6-74), sprocket (6-79) and lever assembly (6 - 69) in their positions shown in the right hand figure, and install the gear assembly (6 - 47).

  NOTE: Be sure to install the gear assembly (6-47) at the position where the sprocket shaft assembly (6 - 80), gear (6 - 83) and pin (6-81) are engaged mutually.

- o After installing the base plate assembly (6-2), check the sprocket to insure a tooth of the sprocket is in the position 6° from the camera body center tine. To be more specific, apply a torque to the sprocket with a finger lightly toward film rewinding direction, wind up the film advance lever, and make sure that a tooth of the sprocket is positioned as shown in the right hand figure.

  Position of sprocket tooth can also be checked by observing sprocket shaft (6 - 82). To be more specific, one end of the sprocket shaft (6 - 82) is cut by a milling machine to install the gear (6 - 54). Position of sprocket tooth is correct when the flat surface of the sprocket shaft end is in right angle against the camera body center line once every three strokes of film winding.

Fig. 14

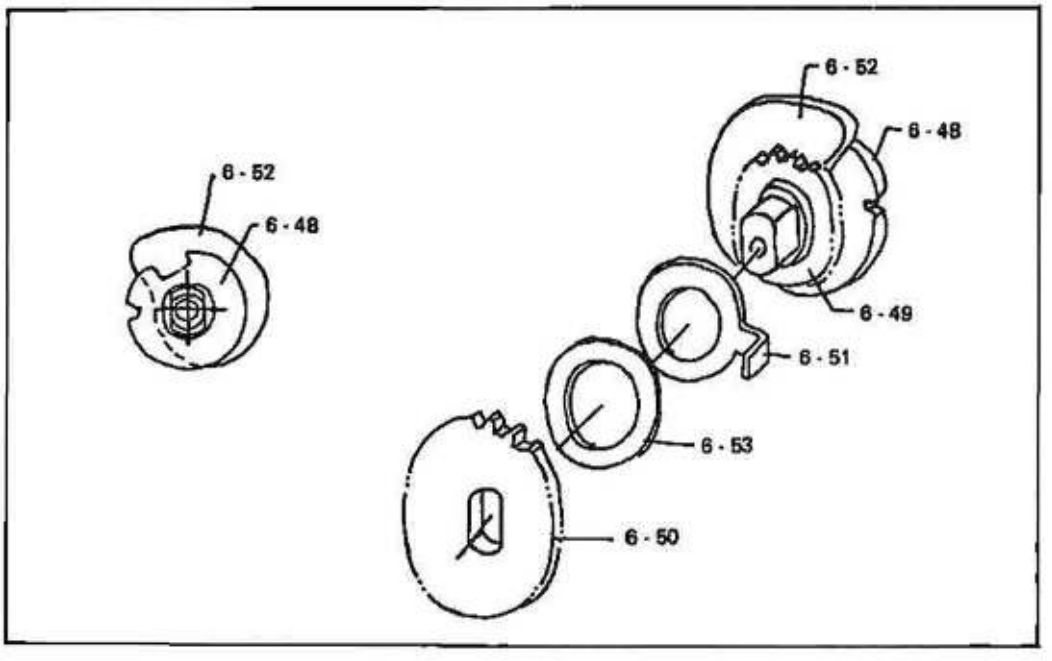
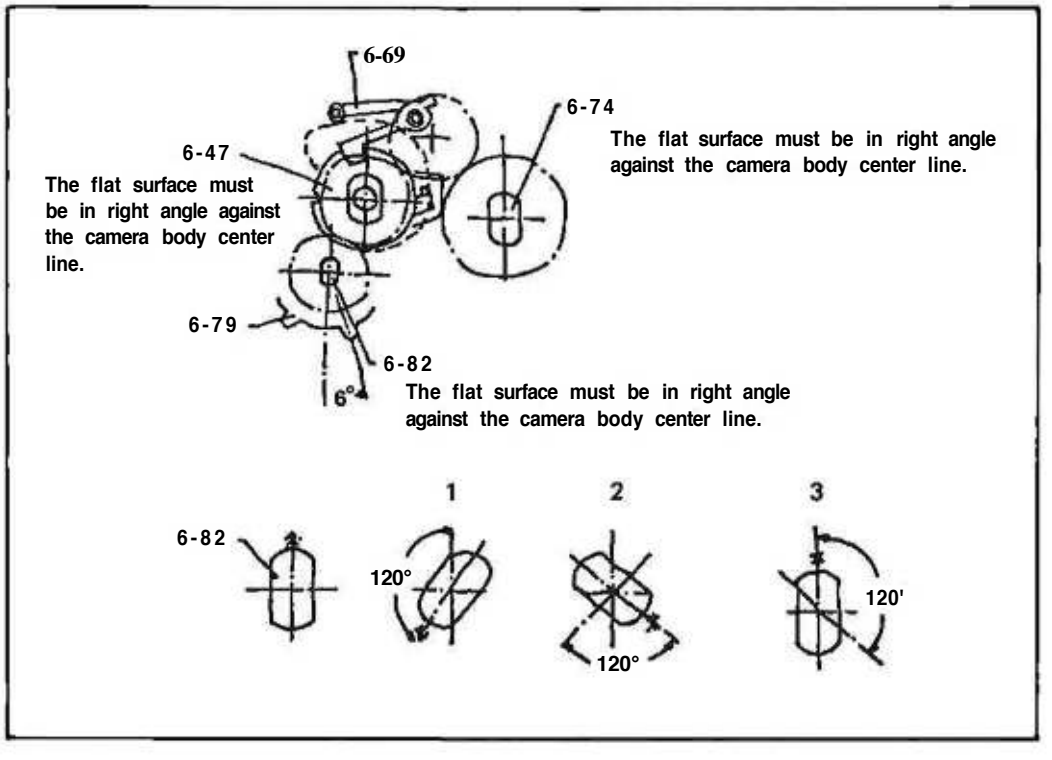

6 - 52
6 - 48
6 - 52
6 - 48
6 - 49
6 - 51
6 - 53
6 - 50

Fig. 15


6-69
6-74
The flat surface must be in right angle against the camera body center line.
6-47
The flat surface must be in right angle against the camera body center line.
6-79
6-82
6°
The flat surface must be in right angle against the camera body center line.
1
2
3
6-82
120°
120°
120'

1-9 Installing charge lever assembly (6 - 40)

a. Apply Helicolube - Molycote mixed grease to the shaft portion.

b. Move the sprocket to set the cam to the position shown in the right hand figure.

c. Install the charge lever assembly (6 - 40).

d. Move the sprocket and move the gear assembly (6-47) until it stops.

1-10 Installing ratchet wheel assembly (6-37)

a. Apply Helicolube - Molycote mixed grease to the shaft and gear portions.

b. Install the ratchet wheel assembly (6 - 37) so that the marking hole is positioned in the side as shown in the right hand figure.

1-11 Installing release lever (6 - 55)

a. Install the release lever (6 - 55) in the position shown in the right hand figure.

b. Note that this lever is required to release the rewind lock not from the film advance lever side but from an Auto - Winder combined with the camera.

Fig. 16

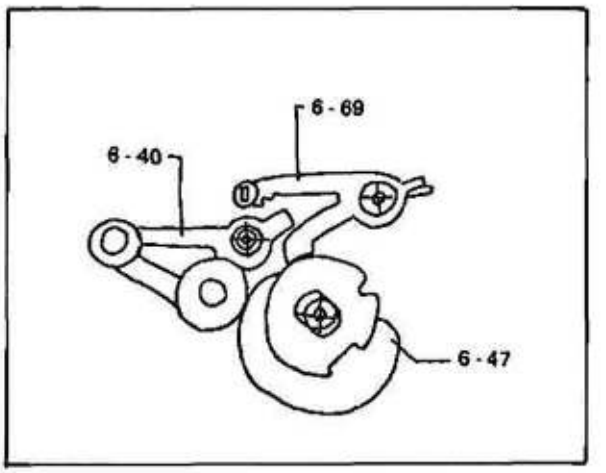
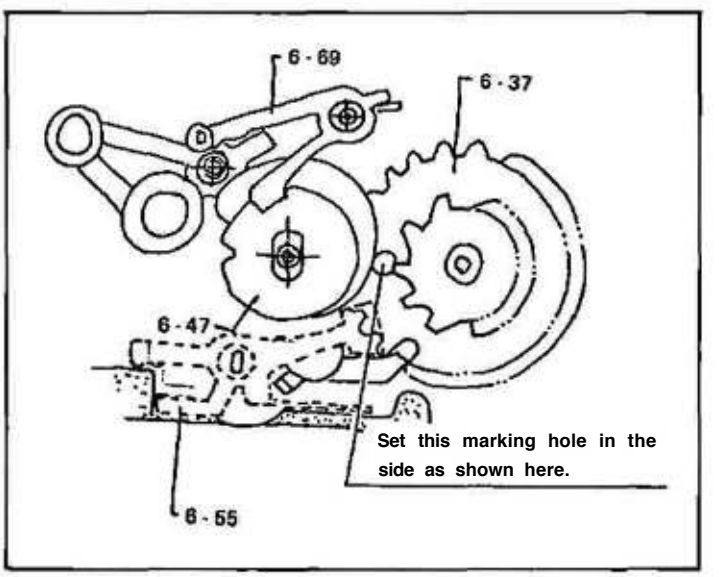

6-69
6-40
6-47

Fig. 17


6-69
6-37
6-47
6-55
Set this marking hole in the side as shown here.

1- 12 Installing base plate assembly (6 - 2)

a. Apply Helicolube - Molycote mixed grease to the shaft holder portions of the base plate assembly.

b. Exercise care for positions of the ratchet wheel assembly (6 - 37), lever assembly (6 - 69) and charge lever assembly (6 - 40).

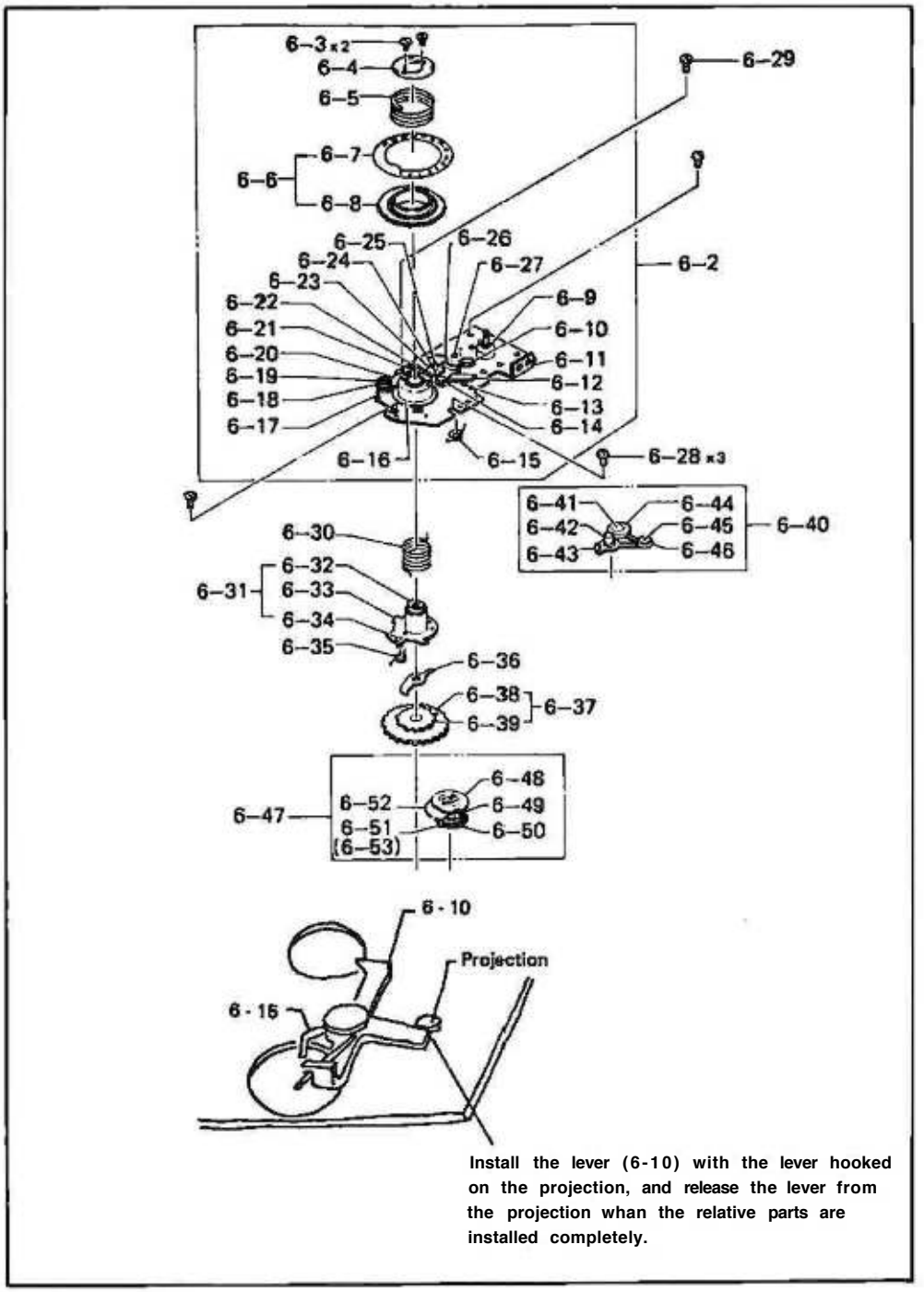
c. Combine the lever (6-36), spring (6-35) and ratchet wheel (6-39) so that the lever is caused to engage with the detent of the ratchet wheel by the spring.

d. Make sure that the lever (6 -10) is away from the stopper (6 - 48).

e. Matching the shaft holder portions, install the base plate assembly (6 - 2) with three screws (6 - 28) and screw (6 - 29).

f. Release the lever (6 -10) to the position where it comes into contact with the stopper (6 - 48).

Fig. 18



Install the lever (6-10) with the lever hooked on the projection, and release the lever from the projection whan the relative parts are installed completely.

1 -13 Assembling base plate assembly (6 - 2)

a. Check the shaft holder (6 -16) to insure that it is cauled in the position shown in the right hand figure against the base plate (6 -11).

b. Check the gears (6 - 21 and 6 - 24) to insure that they are installed respectively on the shafts (6 - 22 and 6 - 25) correctly and they rotate smoothly.

c. Installing gear assembly (6-6)

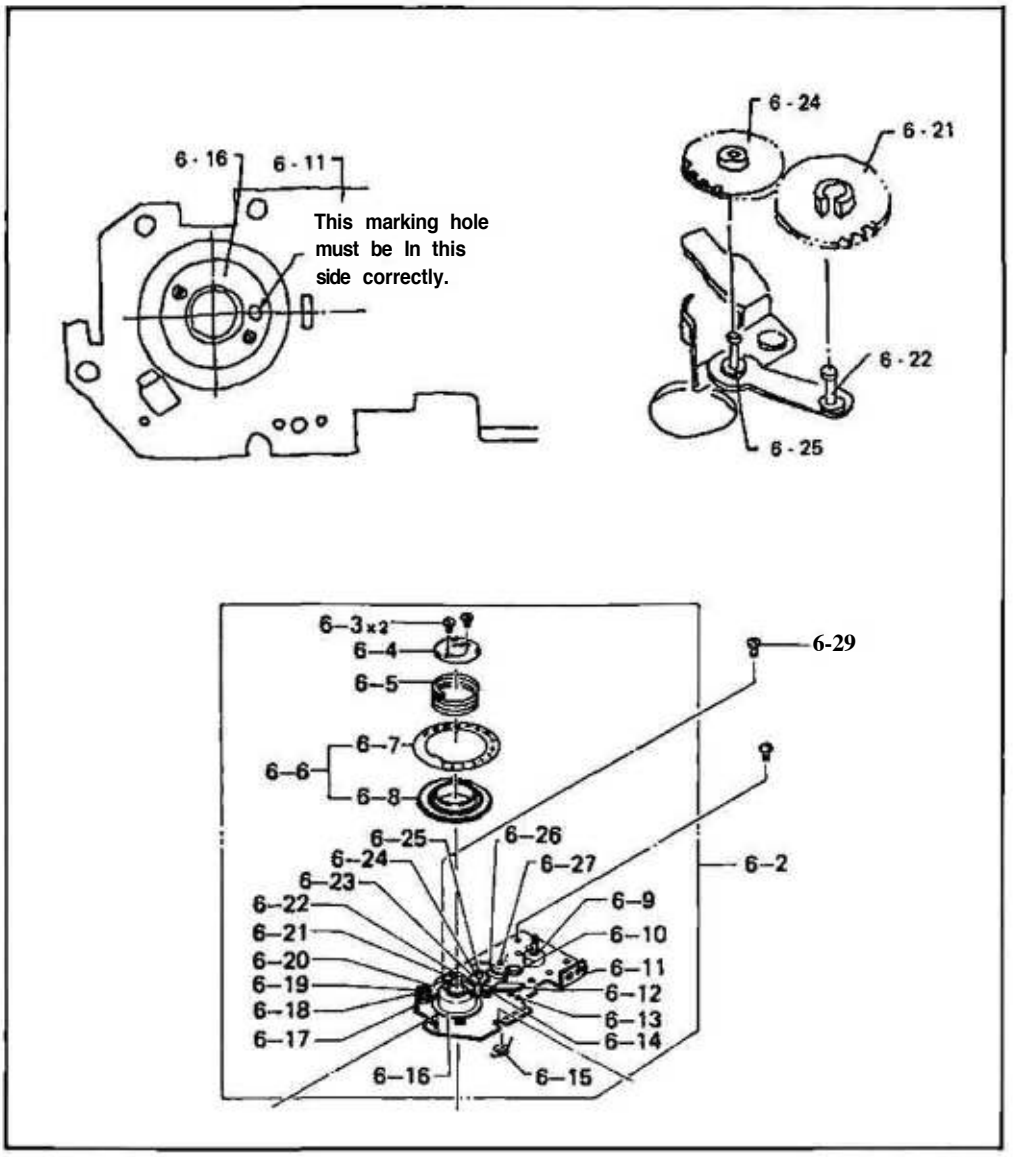
- o Place the spring (6-5) in the opening of the gear assembly (6 • 6).
- o Match the projection (stopper portion) of the gear assembly (6 - 6) to the projection of the base plate (6 -11).
- o Apply one end of the spring (6-5) to the hole on the holder (6-4).
- o Turn the holder (6-4) and match the small hole on the holder with the hole of the shaft holder (6 - 16).

  NOTE: Before installing the holder (6-4), carefully examine which surface is the top.

- o After installing the holder (6-4), make sure that the gear assembly (6-6) resets smoothly.

  NOTE: The gear assembly will not reset smoothly if the spring (6-5) is tangled.

Fig. 19


6 - 16
6 - 11
This marking hole must be In this side correctly.
6 - 24
6 - 21
6 - 22
6 - 25
6-3x2
6-4
6-5
6-7
6-6
6-8
6-29
6-25
6-26
6-24
6-27
6-23
6-2
6-22
6-9
6-21
6-10
6-20
6-11
6-19
6-12
6-18
6-13
6-17
6-14
6-16
6-15

d. Installing square hole plate assembly (6-31)

- o Apply Helicolube - Molycote mixed grease to the spring (6 - 30).
- o Hook the longer arm of the spring (6 - 30) on the hole of the shaft holder (6 -16).
- o Select one out of three holes on the square hole plate assembly (6-31) and decide the force of resetting,
- o Setting it on the stopper, turn the spring about 120° to provide the spring with a proper spring force.
- o Match the plate (1 - 50) to the position shown in the right hand figure from the exposure counter dial side, and install it with the screw temporarily.
- o Keep stopping the lever (6 -10) with the teg portion of the base (2 - 58).
- o Match the projection of the gear (6 - 8) with the notch of the dial plate (6-7), and install the dial plate (6 - 7) with Pliobond.

Fig. 20

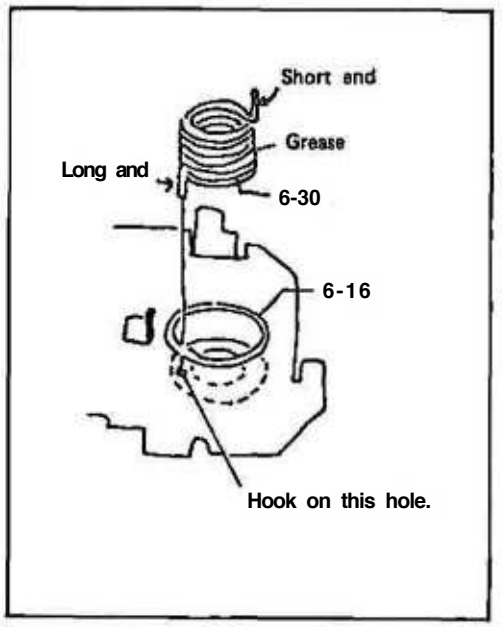


Fig. 21

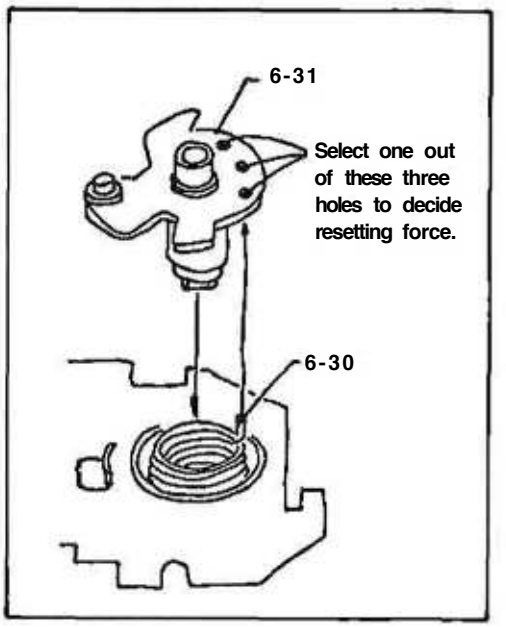


Fig. 22

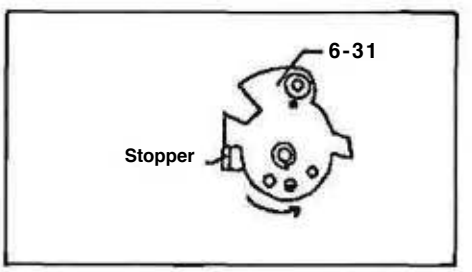


Fig. 23

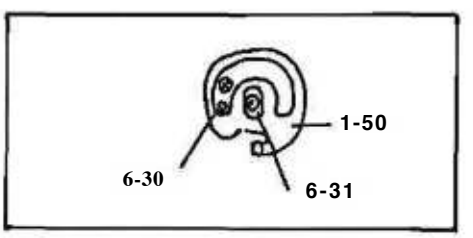
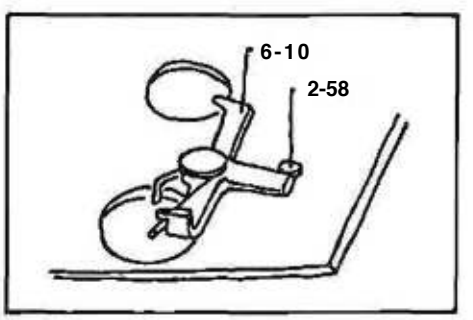


Fig. 24



1 -14 Installing gear (6-54) and lever (6-20)

a. Check the lever (6 - 20) to insure that it is positioned against the gear (6-21) as shown in the right hand figure.

b. Hook the spring (6-17) on the position shown in the right hand figure.

c. Check the gear (6-21) to insure that it engages with the gear (6 - 8) when the bent portion of the lever (6-20) is pushed by the film chamber door.

d. Installing gear (6 - 54)

- With the shutter charged (with the film advance lever wound up completely), set the gear (6 - 21) in the position shown in the right hand figure.
- Install the gear (6 - 54) on the sprocket shaft (6 - 82).

NOTE: The engaging groove (engagement between the sprocket gear and sprocket shaft) is equally divided into three sections. For this reason, if the gear (6 - 21) is not positioned as shown in the right hand figure, the feeding notch of the gear (6-21) engages with the gear (6 - 8), causing the dial plate to indicate wrong exposure number.

e. The gear (6-21) turns 360° per frame.

Fig. 25

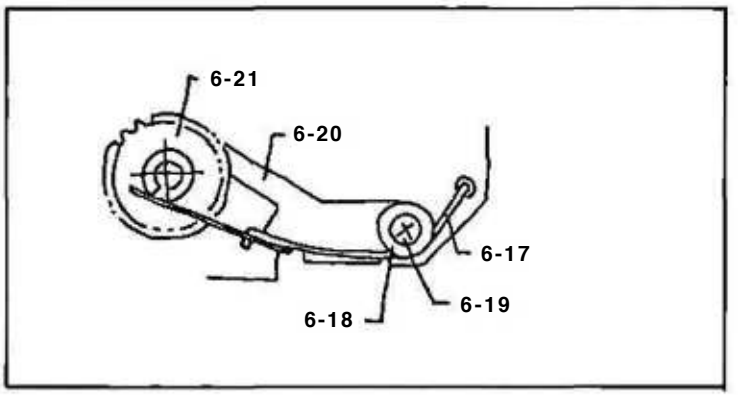


Fig. 26

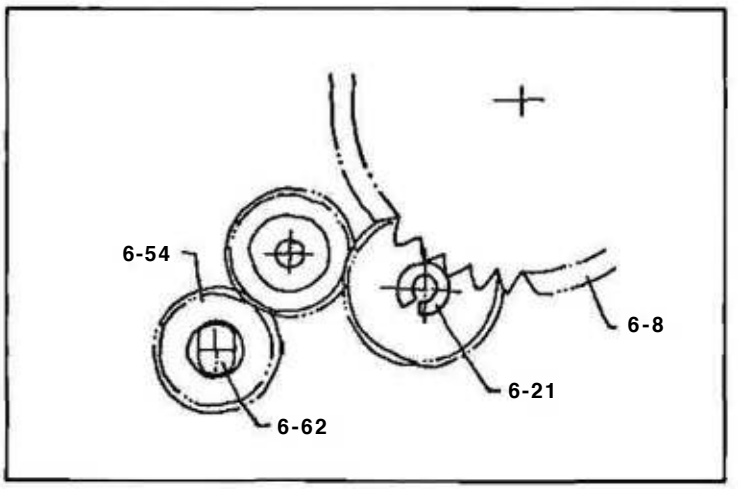
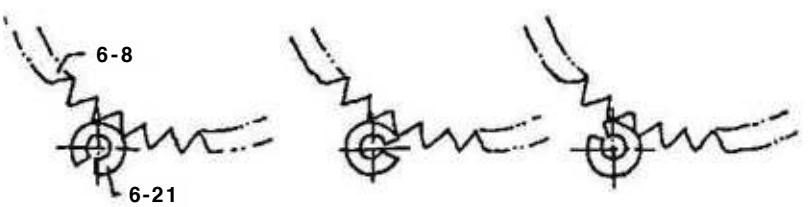


Fig. 27



The gear (6-21) must positioned In the above shown three positions even if the film is rewound.

1 - 15 Charge lever assembly (6 - 40)

a. Check the rollers (6 - 44 and 6 - 46) to insure that they have been securely caulked.

b. Make sure that the shafts (6 - 41 and 6 - 45) are not loose. If these shafts are loose, the quick return mechanism will not be set correctly.

1-16 Installing light shielding plates (6-97 and 6-98)

o Install the light shielding plates (6 - 97 and 6 - 98) correctly and firmly with Pliobond.

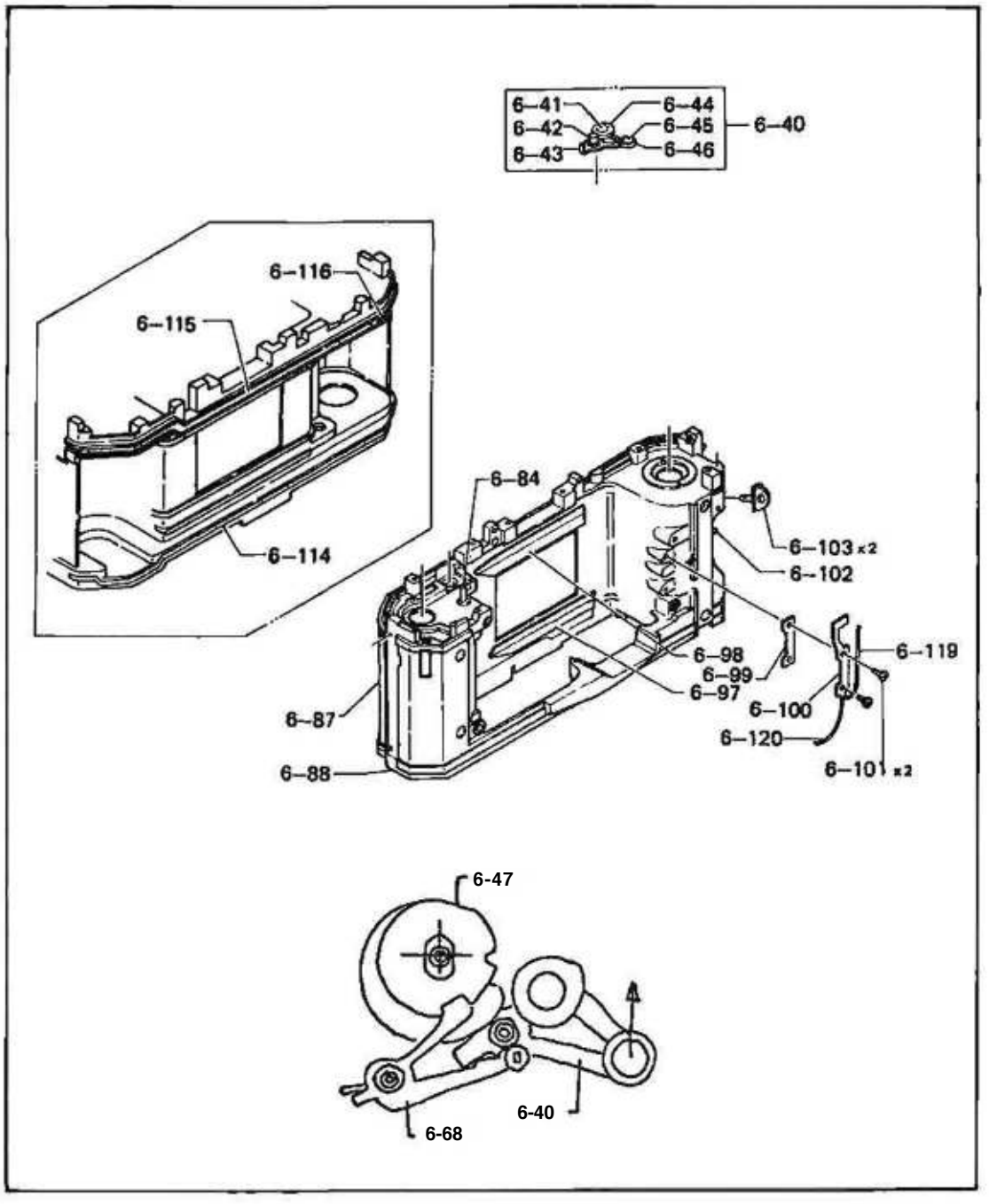
1 -17 Installing moquettes (6 -14, 6 -116 and 6 - 116)

o Install these moquettes correctly and firmly in their positions with Pliobond.

1-18 Checking film advance lever motion

Depress the charge lever assembly (6 - 40) to disengage the lever assembly (6 - 69) from the stopper (6 - 48), and make sure that the film advance lever can be turned.

Fig. 28


6–41
6–42
6–43
6–44
6–45
6–46
6–40
6–116
6–115
6–114
6–84
6–103 x2
6–102
6–98
6–99
6–97
6–119
6–100
6–120
6–101 x2
6–87
6–88
6-47
6-40
6-68

2. Film chamber door assembly (3-1)

2 - 1 Installing pin (3 - 9) and moving pin (3 -12)

a. Install the pin (3 - 9) with Araldite.

b. Apply the spring (3 -11) and moving pin (3 -12), and install the moving pin (3 -12) stationarily with the screw (3-8).

NOTE: Check the moving pin (3 -12) to insure that it moves smoothly.

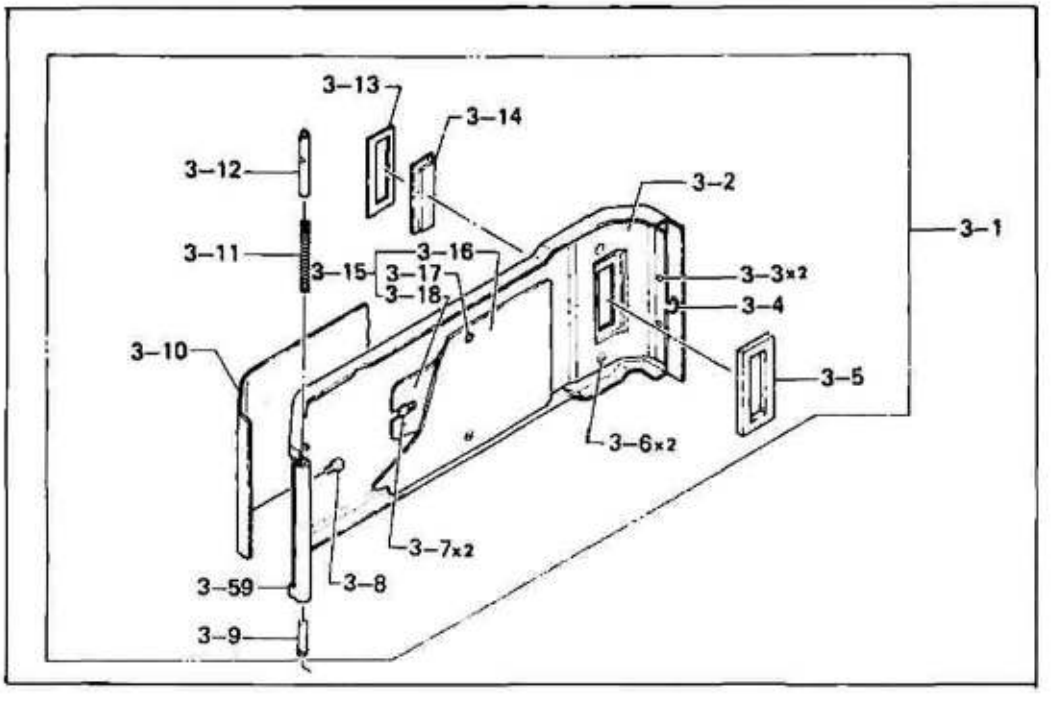
2 - 2 Pressure plate assembly (3-15)

a. Examine the pressure plate (3 -16) and leaf spring (3 - 18) for their caulking direction.

b. If direction of the leaf spring (3 -18) is reversed 180°, the pressure plate will come into contact with the sprocket during opening and closing of the film chamber door, generating a clattering sound.

c. Check the pressure plate (3-16) to insure that it is not scarred or scratched. A scar or scratch will damage film.

Fig. 29


3-13
3-14
3-12
3-2
3-1
3-11
3-16
3-15
3-17
3-18
3-3×2
3-4
3-10
3-5
3-6×2
3-7×2
3-59
3-8
3-9

3. Focal plane shutter assembly (5-20)

a. Place the focal plane shutter assembly (5 - 20) into the camera body from the bottom of the camera body.

NOTE: Be careful not to raise the light shielding plate (6 - 98).

b. Install the focal plane shutter assembly with three screws (5 - 72).

c. With care exercised on the direction of the notch, install the notched gear (5-67).

d. Combine the collar (5 - 68) with the seat plate (5 - 69), and install them with the clutch (5-70) tightly on the focal plane shutter assembly.

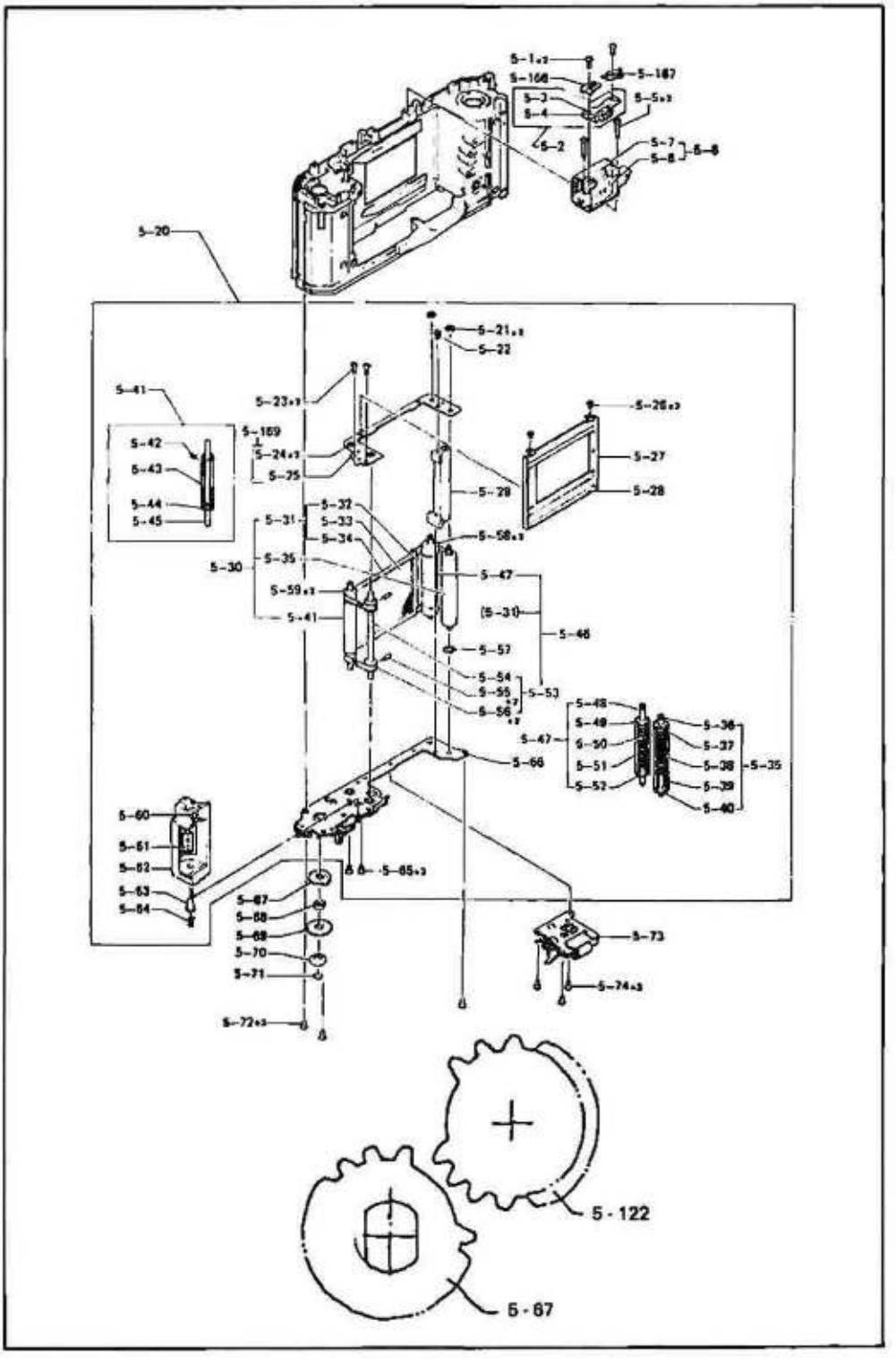
e. Install the cover plate (6-71) with Pliobond.

NOTE: When loosening the clutch (5 - 70), wind up the film advance lever in a half way, hold the sprocket, and loosen the clutch.
If the clutch is loosened without winding the film advance lever in a half way, the claw portion of the lever (6-51) may be damaged.

f. Release the charge lever assembly (6 - 40), wind up the film advance lever, and make sure that the shutter blinds are wound up.

g. When the shutter blinds are wound up completely, make sure that the notched gear (5 - 67) disengages permitting the shutter blinds to return the original positions.

Fig. 30


5-1
5-166
5-167
5-3
5-4
5-5
5-2
5-7
5-8
5-6
5-20
5-21
5-22
5-41
5-23
5-26
5-169
5-42
5-43
5-24
5-25
5-27
5-28
5-29
5-44
5-45
5-31
5-32
5-33
5-34
5-58
5-30
5-35
5-47
5-59
5-41
(5-31)
5-46
5-57
5-54
5-55
5-56
5-53
5-48
5-49
5-50
5-51
5-52
5-36
5-37
5-38
5-39
5-40
5-35
5-66
5-60
5-61
5-62
5-63
5-64
5-65
5-67
5-68
5-69
5-70
5-71
5-72
5-73
5-74
5 - 122
5 - 67

4. Assembling focal plane shutter assembly (5 - 20)

a. Combine the battery compartment (5 - 62), contact piece (5 • 60), contact point (5-63) and spring (5-64), and install them on the base plate (5-66) with two screws (5-65).

b. Install the column (5-29) on the base plate (5 -66) with the screw (5-78).

c. Combine the 2nd shutter blind assembly (5 - 30) and 1st shutter blind assembly (5 - 46) with two large rollers (5 - 58), two small rollers (5 - 59) and washer (5-57) as shown in the right hand figure, and fit them on the shaft holder on the base plate (5-66).

d. Match the base plate (5 - 25) to the shutter blind spindles, and install the base plate with two screws (5 - 23) and screw (5 - 22).

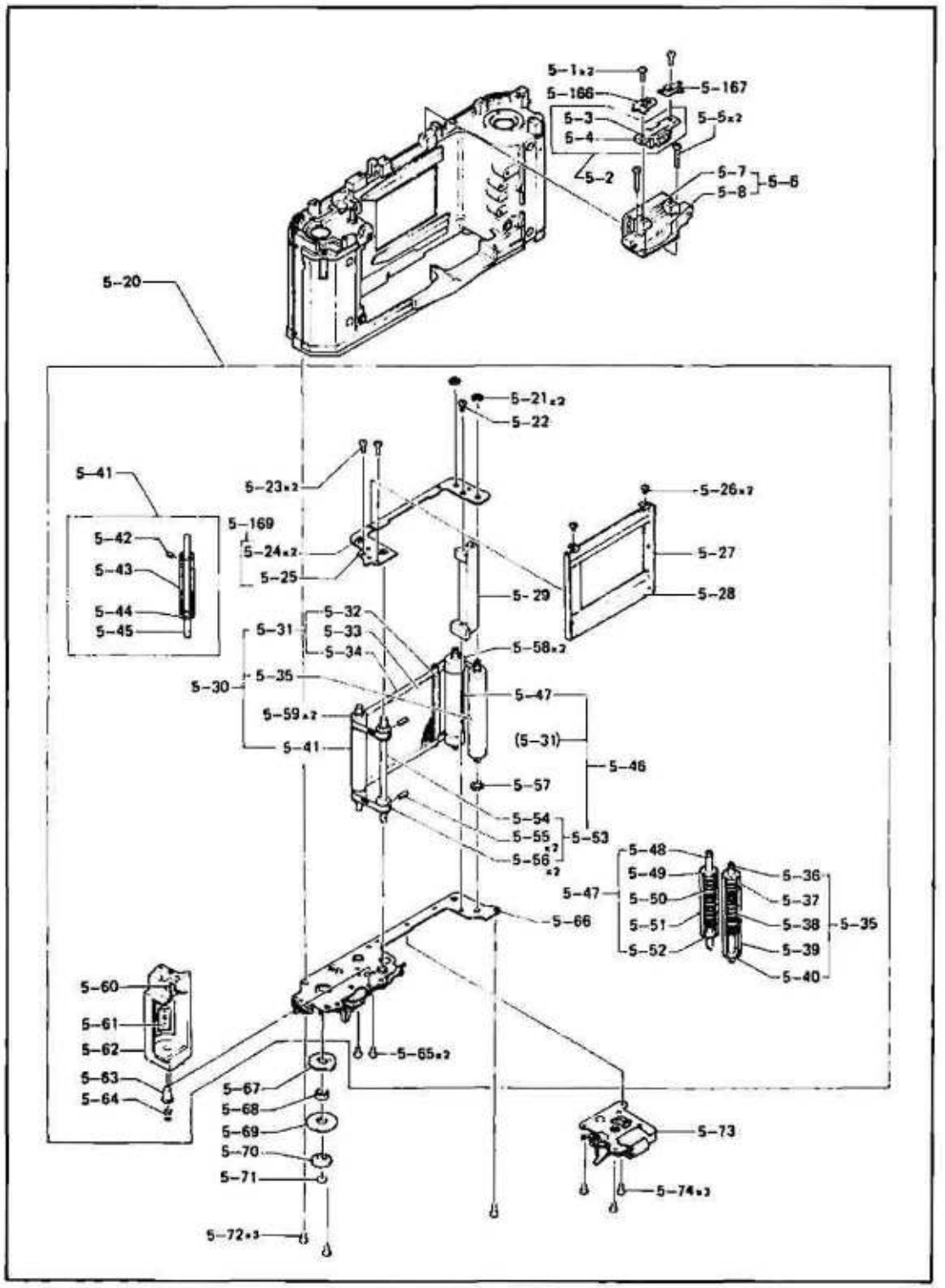
e. Install two E- clips (5-76) and two E- clips (5-21) on the shutter blind spindles.

f. Install the light shielding plate (5-27) with two screws (5-26).

NOTE: Be careful not to allow the light shielding plate (5 - 27) coming into contact with the metal fixture (5 - 32).
If it drags, shutter blind velocity will fluctuate.

g. Install the moquette (5 - 28) with Pliobond.

Fig. 31


5-1×2
5-166
5-167
5-3
5-4
5-5×2
5-2
5-7
5-8
5-6
5-20
5-21×2
5-22
5-41
5-23×2
5-26×2
5-169
5-42
5-24×2
5-27
5-43
5-25
5-29
5-28
5-44
5-45
5-32
5-31
5-33
5-34
5-58×2
5-30
5-35
5-47
5-59×2
(5-31)
5-41
5-46
5-57
5-54
5-55
5-53
5-56×2
5-48
5-49
5-36
5-47
5-50
5-37
5-51
5-38
5-35
5-52
5-39
5-40
5-66
5-60
5-61
5-62
5-65×2
5-63
5-64
5-67
5-68
5-69
5-70
5-71
5-73
5-74×2
5-72×3

h. Install two gears (6 - 101) with two spring pins (6 -100).

i. Install two ratchet gears (6 - 75) on the shutter blind spindles after applying Pliobond so that they will not be dropped off.

j. Apply the click spring (6-79) to the screw (5-78), and hold the ratchet geat (5-76) with the screw (5-78). Now, install the E-clip (5-77) to secure the click spring (5 - 79).

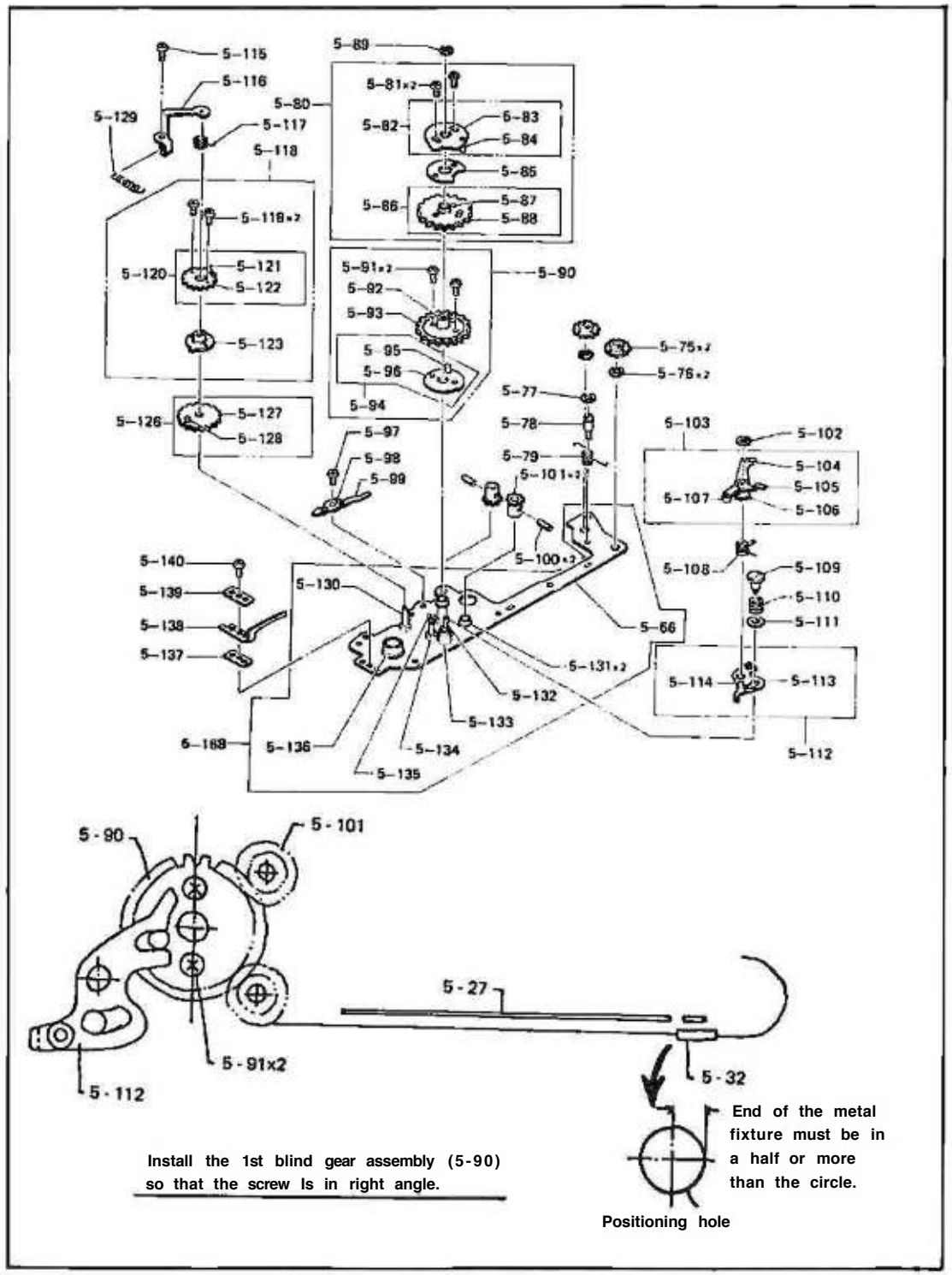
k. Turn the two ratchet gears (5 - 75) counterclockwise to provide the 1st and 2nd shutter blinds with a light tension.

1. With the metal fixture (5-32) of the 1st blind matched with the positioning hole of the light shielding plate (5-27), hold the gear (5-101), and install the 1st shutter blind gear assembly (5 - 90) in the position shown in the right hand figure.

m. Install the stop lever assembly (5 - 112), and apply Helicolube - Molycote mixed grease to the sliding surface and washer (5 - 111).

n. Loosen two screws (5-91) and finely adjust position of the metal fixture (5-32). When position of the metal fixture is adjusted completely, apply Pliobond to the screws to lock them and retighten the screws securely.

Fig.32


5-115
5-116
5-129
5-117
5-118
5-118×2
5-120
5-121
5-122
5-123
5-126
5-127
5-128
5-89
5-81×2
5-80
5-82
5-83
5-84
5-85
5-86
5-87
5-88
5-91×2
5-90
5-92
5-93
5-95
5-96
5-94
5-97
5-98
5-99
5-75×2
5-76×2
5-77
5-78
5-79
5-101×2
5-100×2
5-103
5-102
5-104
5-105
5-107
5-106
5-108
5-109
5-110
5-111
5-140
5-139
5-138
5-137
5-130
5-66
5-131×2
5-132
5-133
5-114
5-113
5-112
6-169
5-136
5-134
5-135
5-90
5-101
5-27
5-91x2
5-112
5-32
Install the 1st blind gear assembly (5-90) so that the screw Is in right angle.
End of the metal fixture must be in a half or more than the circle.
Positioning hole

o. Set the gear (5-101) stationarily in the position where the metal fixture (5-32) of the 2nd blind is matched with the metal fixture of the 1st blind, and install the 2nd shutter blind gear assembly (5 - 80) in the position shown in the right hand figure.

p. Loosen two screws (5 - 81), and finely adjust overlapped positions of the two metal fixtures.
After completing the adjustment, apply Pliobond to the screws (5 - 81) to lock them, and retighten the screws securely.

q. Set the intermediate gear assembly (5 -126) so that the mark on the intermediate gear is positioned as shown in the right hand figure, and install the clutch gear assembly (5 -118).

r. Hook the spring (5 - 117) on the position shown in the right hand figure.

s. Check the arm lever (5-116) to insure that it does not hold the spring.

NOTE:
- o If the arm lever (5-116) holds the spring, the clutch gear assembly (5-118) does not return smoothly causing traveling velocity of the 1st blind to fluctuate.
- o When shape of the arm lever (5 - 116) is improper, tooth position of the clutch gear assembly (5 - 118) will be deviated, causing gear teeth to collide when the film advance lever is wound.
- o When winding up film successively, if the gear teeth collide, adjust the arm lever (5-116).

Fig. 33

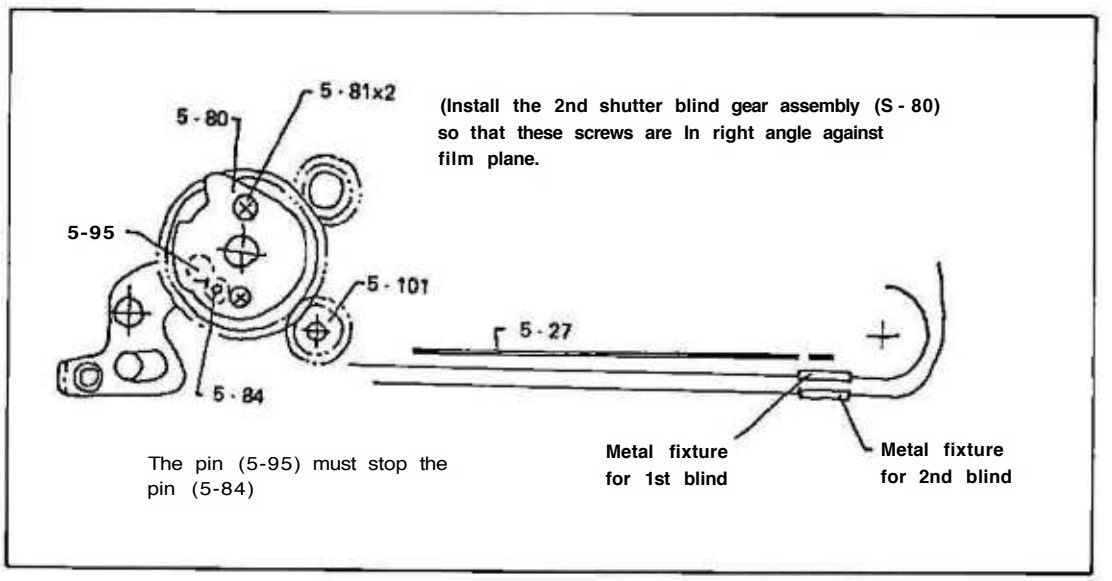
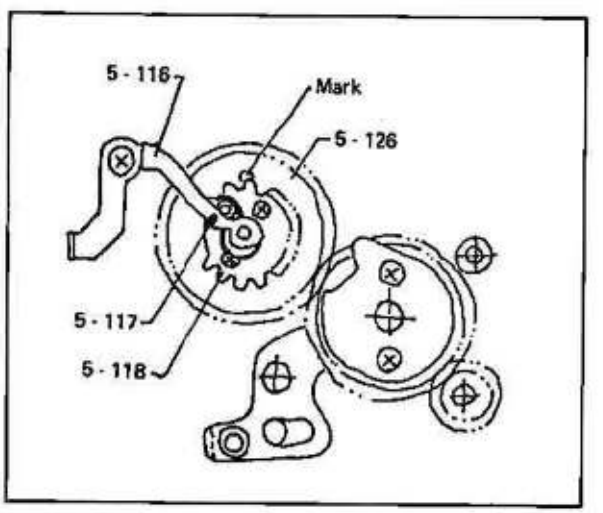

5 - 81x2
5 - 80
5-95
5 - 101
5 - 27
5 - 84
(Install the 2nd shutter blind gear assembly (S - 80) so that these screws are In right angle against film plane.
The pin (5-95) must stop the pin (5-84)
Metal fixture for 1st blind
Metal fixture for 2nd blind

Fig. 34


5 - 116
Mark
5 - 126
5 - 117
5 - 118

5. Assembling mirror case and relative parts

5-1 Description for operation of quick return mechanism.

a. Apply Helicolube - Molycote mixed grease to the shaft portions.

b. When the quick return charge lever assembly (4 - 90) is moved to the arrow mark direction (charged), it is held in the charged position by the lever (4 - 85).

c. Mirror rising operation

When the ML magnet assembly (4 - 77) is demagnetized, the lever (4 - 47) moves, the spring (4 -102) causes the lever assembly (4 - 97) to move toward mirror raising direction, and thus, the mirror rises.

Fig. 35

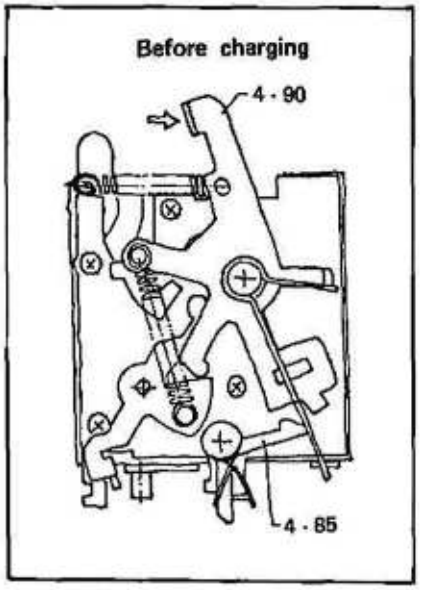


Fig. 36

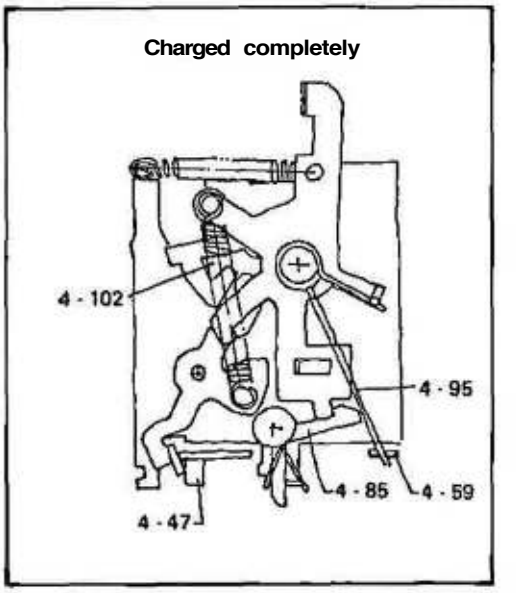
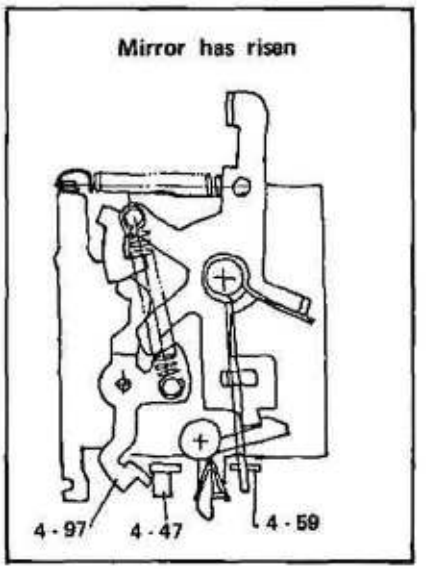


Fig. 37



d. Aperture stop - down mechanism charging operation

- o When the quick return charge lever assembly (4 - 90) is charged, the spring (4 - 95) causes the lever assembly (4 - 59) to turn toward direction (A).
- o At the same time, the spring (4 -102) causes the lever assembly (4 - 47) to turn toward direction (B).
- o Both the lever assemblies (4 - 59) and (4 - 47) are stopped by the lever (4 -15).
- o To the lever (4 -15), stopping force is added by the ML magnet assembly (4 - 65) at the point of pin (4 -16).

e. Aperture stopping down operation

- o When the ML magnet assembly (4-65) demagnetizes, the force at the point where holding force of the ML magnet assembly applied is freed, and magnet disengaging force is enhanced by the spring (4 - 70).
- o Thus, the lever (4 -15) turns causing the lever assemblies (4 - 59) and (4 - 47) to disengage.
- o Then, the lever (4 - 56) is pushed by the pin (4 - 60) of the lever assembly (4-59), causing the lever (4-56) to move toward aperture stoppind down direction.
- o As the lever assembly (4 - 47) turns, the lever assembly (4 - 97) moves and kicks up the mirror.

Fig. 38

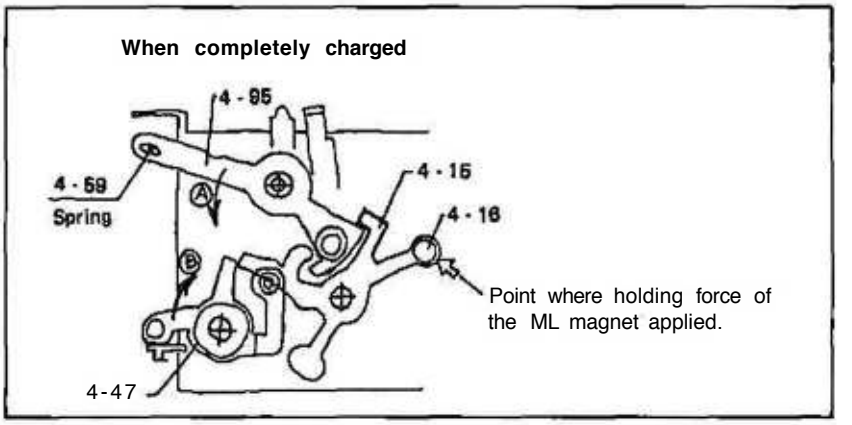


Fig. 39

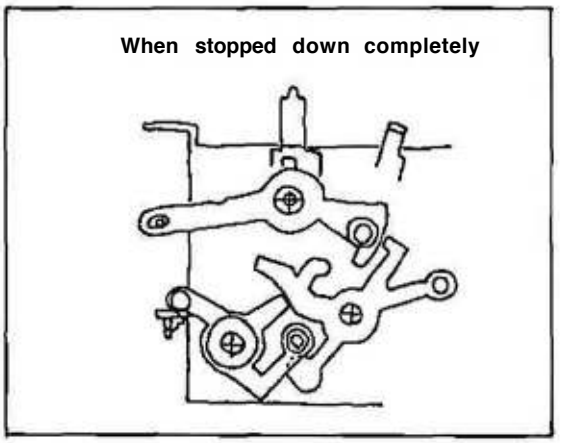


Fig. 40

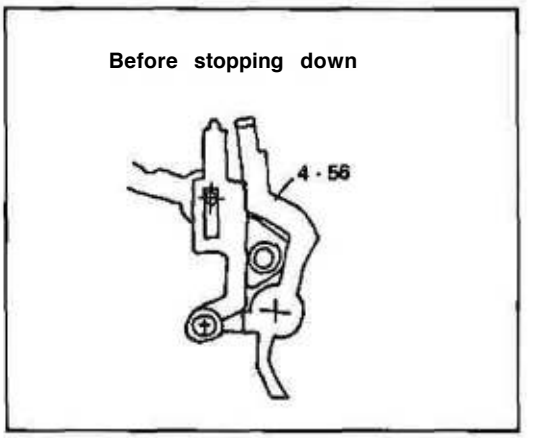
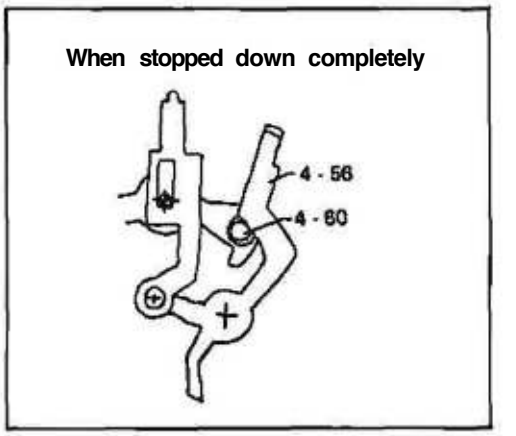


Fig. 41



f. Returning process of the quick return mechanism

- o When an exposure is made completely and the 2nd shutter blind completes its travel, the lever (4 - 85) is pushed by the release lever (6 - 99).
- o The lever (4 - 85) disengages with the quick return charge iever assembly (4-90).
- o The spring (4 - 89) causes the quick return charge lever assembly (4 - 90) to return to the original position.
- o The attracted surface must come into tight contact even if the quick return charge lever assembly (4-90) is returned gently.

5-2 Installing ML magnet assembly (4-65)

- o Charge the quick return charge lever assembly (4 - 90) without installing the ML magnet assembly.
- o When the quick return charge lever assembly cannot be charged, thoroughly clean the hook portion of the lever (4 -15).
- o Position and install the pin (4 - 16) and lever (4 - 74) of the ML magnet assembly as shown in the right hand figure.
- o Apply the spring (4-63) as shown in the right hand figure.

Fig. 42

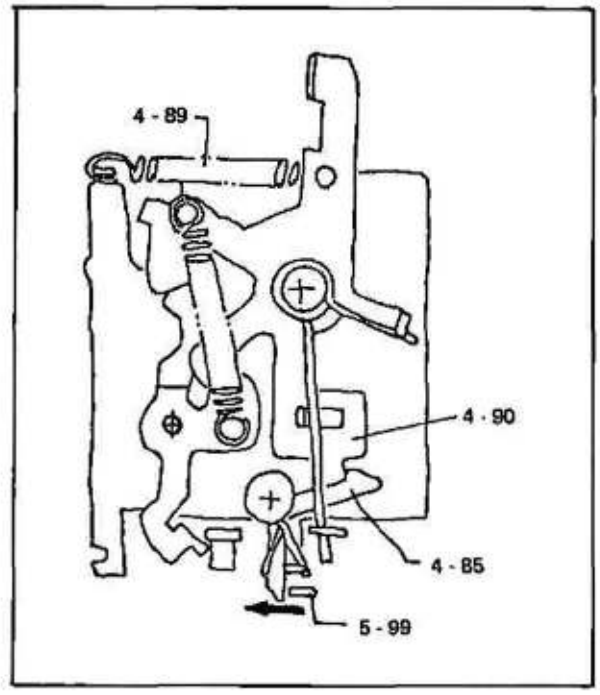
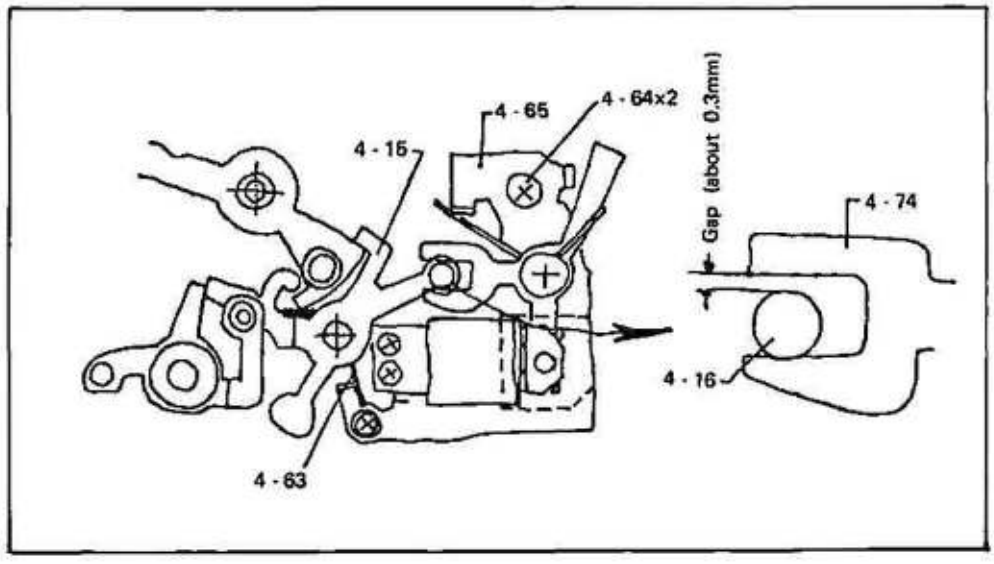


Fig. 43



- Apply DC 2.5V across lead wires (blue (—) and orange (+)) of the ML magnet assembly (4 - 65), and make sure that the mirror rises.
- With the pin (4 -16) held with 8 Bcrew driver, wind up the film advance lever. Now, move the screw driver away from the pin slowly, and make sure that a gap is left between the pin and lever.
  (Without this gap, the shutter will not be released sometimes.)
- When a gap exists the shutter is not released,
  - The magnet coil is broken.
  - Strengthen the spring (4 - 70).

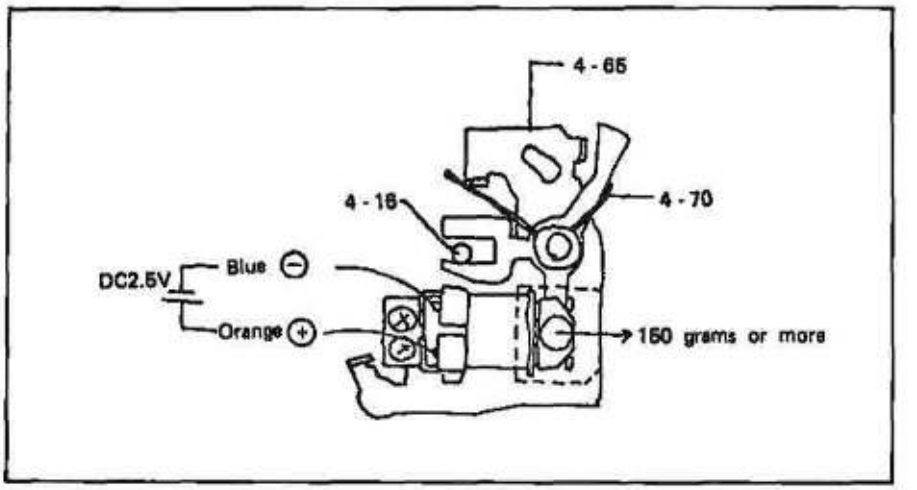
5-3 ML magnet assembly (4 - 65)

- Specifications

DC resistance of coil:	120 ohms
Attracting force:	150 grains or more (at the attracted piece supporting shaft with the spring unhooked)
Operating voltage:	DC 2.5V (Should be separated by the spring)

- Attracting force will reduce if any dust is between the iron core and attracted piece.
- Exercise care for polarity (positive and negative terminals of the coil).

Fig. 44



6-4 Magnet assembly (5-73) (α and β magnets) releasing mechanism

- o When the quick return mechanism operates, the lever assembly (4 - 47) operates, and the pin (4 - 48) releases the release lever (5 -163) of the magnet assembly (6-73).
- o When the lever assembly (4 - 47) is deformed and the film advance lever is wound up, the release lever (5 -163) is pushed.
  With the release lever (5-163) pushed, first blind holding force becomes insufficient causing the first shutter blind to run alone as soon as the shutter is charged.

Fig.45

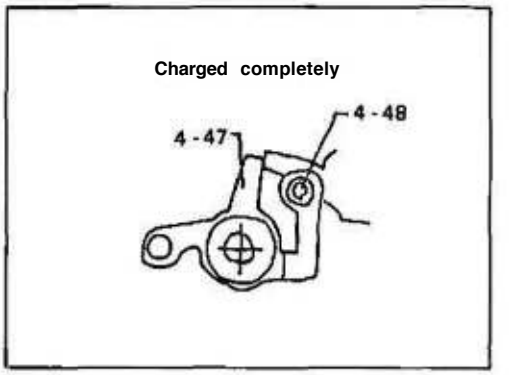
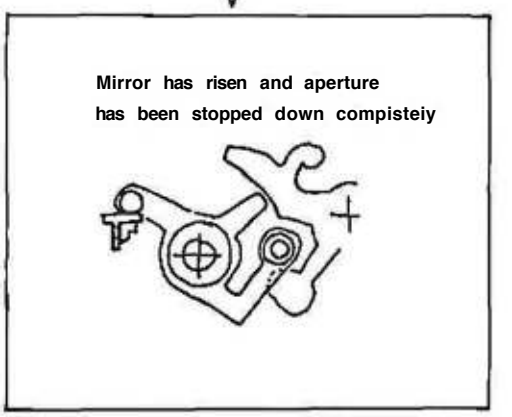

Charged completely
4-47
4-48

Fig.46


Mirror has risen and aperture
has been stopped down compisteiy

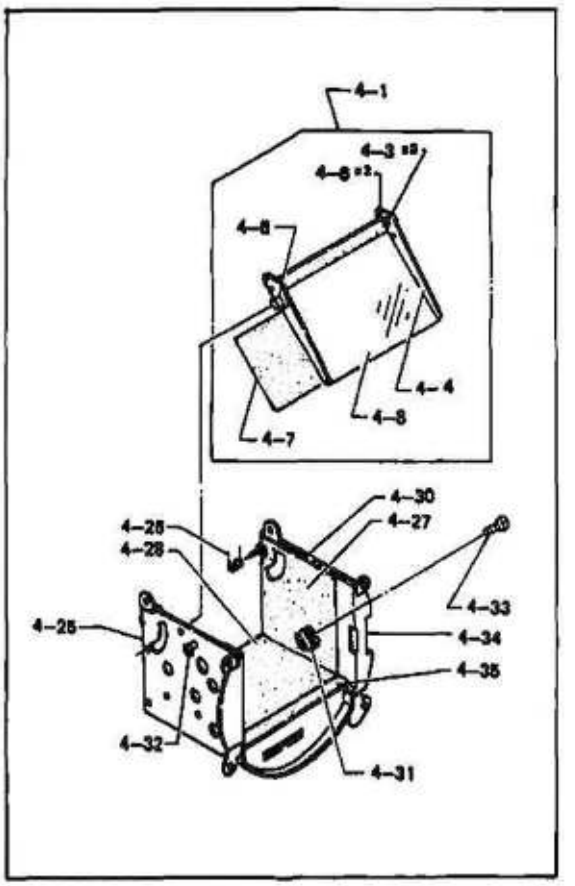
5 - 5 Mirror assembly (4 - 1)

a. When installing the mirror (4 - 8), use Bontack (adhesive).

b. Hook the spring (4-26) between the mirror assembly (4-1) and lens mount base (3 - 34).

c. When installing the cover (4-34), insert the projection (for positioning) of the cover into the hole correctly or otherwise the mirror assembly (4-1) will be hooked by the cover.

Fig. 47



6. Lens mount base assembly (3 - 54)

6 -1 Lock pin (3 - 42)

a. Make sure that the lock pin moves smoothly and that it can be pushed down below the flange surface correctly.

b. Make sure that the lock pin is projected correctly by the leaf spring (3-27).

6 - 2 Button (3-49)

a. Insert the projection of the lever (3 - 48) into the guide groove on the diecast lens mount base, and combine the button (3 - 49) with the lever (3 - 48) in such a manner as that the button and lever hold the diecast lens mount base between them.

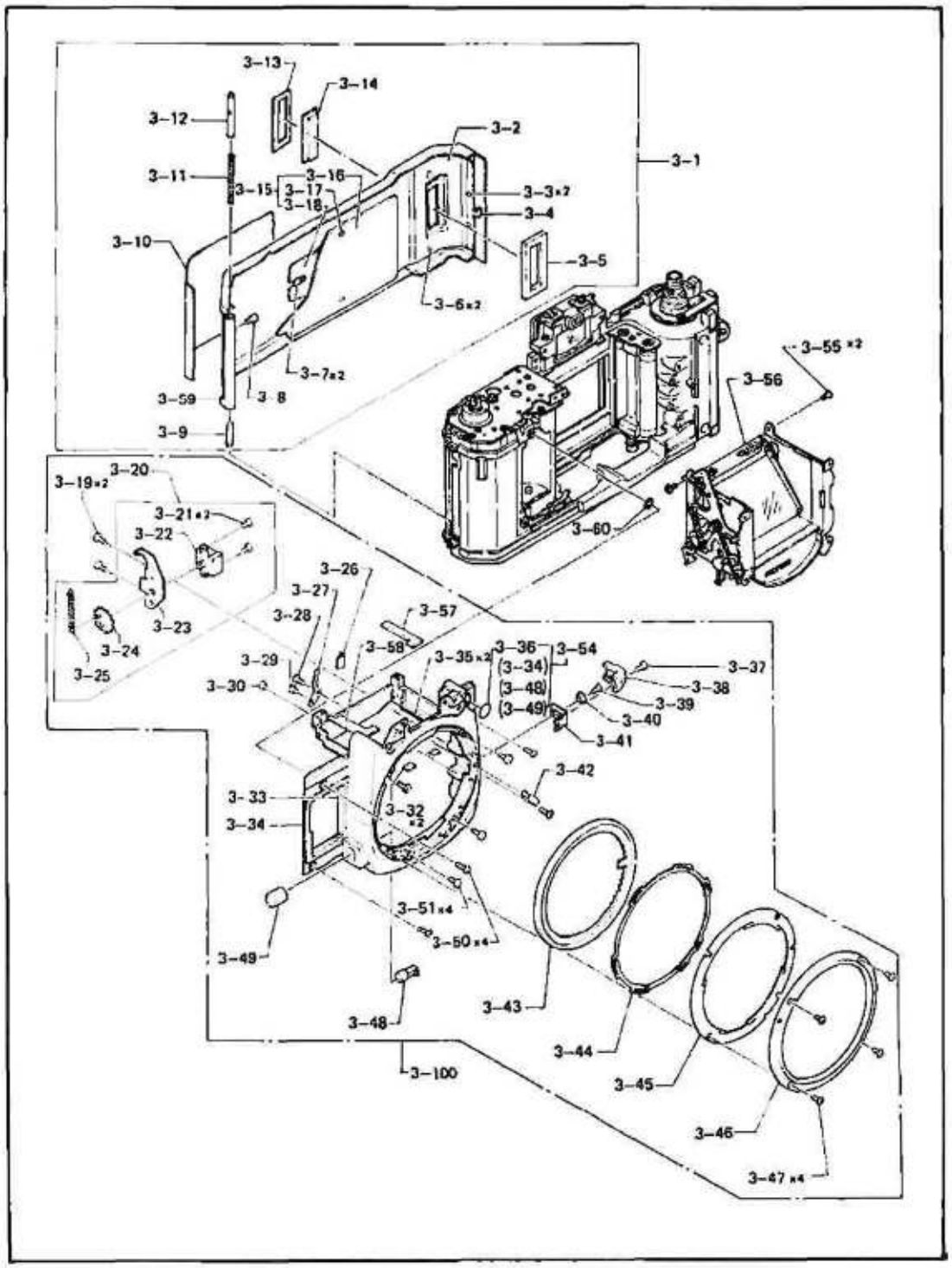
b. Push the button into the lens mount base until it conies into contact with the lever.

c. Install the lever and button with Araldite.

6 - 3 Installing mirror assembly (4 -1)

o Tighten four screws (3 - 51) at the front face of the lens mount bast-, tighten two screws (3 - 55) at the side, and thus, install the mirror assembly on the lens mount base.

Fig. 48


3-13
3-14
3-12
3-2
3-1
3-11
3-15
3-16
3-17
3-18
3-3×7
3-4
3-10
3-5
3-6×2
3-55×2
3-56
3-7×2
3-59
3-8
3-9
3-60
3-19×2
3-20
3-21×2
3-22
3-23
3-24
3-25
3-26
3-27
3-28
3-57
3-58
3-29
3-30
3-35×2
3-36
(3-34)
(3-48)
(3-49)
3-54
3-37
3-38
3-39
3-40
3-41
3-42
3-33
3-34
3-32×2
3-51×4
3-50×4
3-49
3-48
3-100
3-43
3-44
3-45
3-46
3-47×4

6 - 4 Installing mount ring (8 - 40)

a. Carefully combine the aperture transmission ring (3 - 43) with the leaf spring (8 - 44) and claw ring (3 - 46), and Install the mount ring (8 - 46) on the lens mount base with four screws (8 - 47).

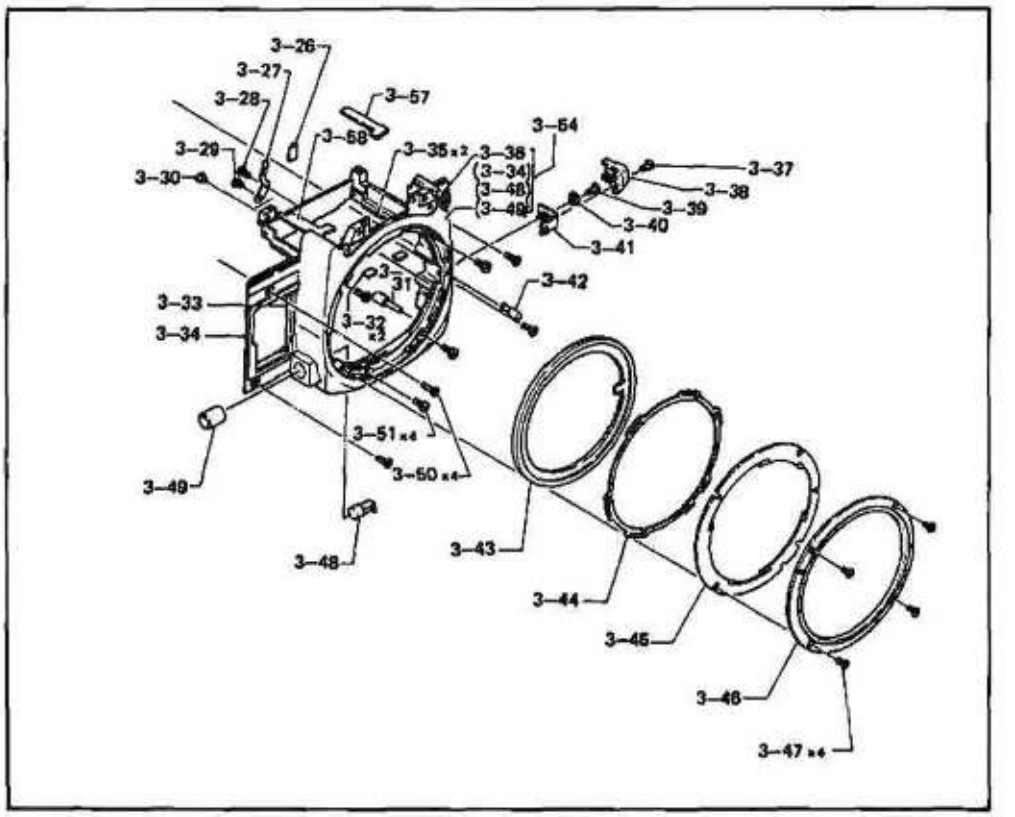
b. Make sure that the claw ring (8 - 46) is not riding on the lent mount base (8-84). If this claw ring is on the lens mount base, focusing will not be made in the viewfinder or correct flangeback cannot be obtained.

c. Make sure that the aperture transmission ring (8 - 48) moves snoothly.

d. Apply Helicolube - Molycote mixed grease to the contact surfaces of the claw ring (8-46) and leaf ipring (8-44) slightly.

e. Apply Losold grease to the claw portions of the bayonet mount to improve smoothness. In this case, apply Losoid grease to the flange surface of the lens and claw portions, and wipe off the greats from the lens side after lnstallng the lens on the camera.

Fig. 49


3-26
3-27
3-28
3-57
3-58
3-54
3-29
3-35 x2
3-38
3-37
3-30
(3-34)
(3-48)
(3-49)
3-38
3-39
3-40
3-41
3-31
3-42
3-33
3-32 x2
3-34
3-51 x4
3-50 x4
3-49
3-48
3-43
3-44
3-45
3-46
3-47 x4

6 - **5** **Installing F - value resistor assembly (3 - 20)**

a. Make sure that resistance across the white and blue lead wires is 0 to 2 KΩ (±20%).

b. Combine the stopper of the gear (3-24) with that of the holding plate (3 - 23), and install the spring (3 - 25).

c. Set the gear (3-24) so that the spring is wound one to two teeth of the gear.

d. Turn the aperture transmission ring (8-43) counterclockwise (when observed from the lens side) until it comes into contact with the stopper.

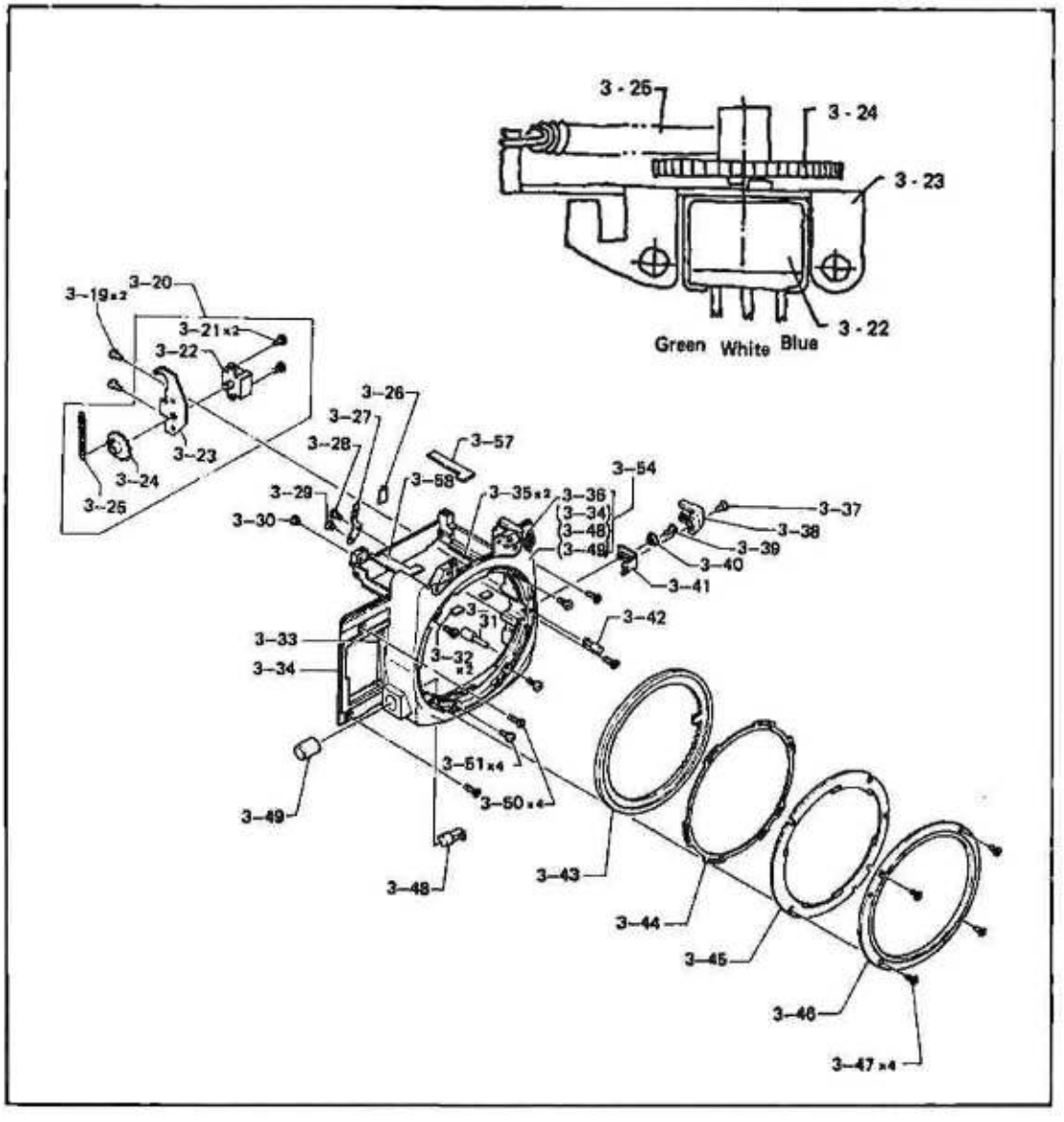
e. Combine the F - value resistor assembly (3 - 20) with the aperture transmission ring (3-43).

f. After tightening the screws, make sure that the aperture transmission ring (3 - 43) is caused to return to the stopper smoothly by the spring (3 - 25).

g. Make sure that resistance across the white and blue lead wires of the potentiometer assembly (3-- 22) is about 200Ω at the minimum aperture side or about 2 KΩ at the full aperture side.
Further, make sure that resistance varies from 200Ω to 2 KΩ as the aperture is changed from the minimum aperture to full aperture.

h. Apply Helicolube - Molycote mixed grease slightly to the portion of the gear (3-24) which slides on the mirror case.

Fig. 50


3-25
3-24
3-23
3-22
Green White Blue
3-19×2
3-20
3-21×2
3-22
3-23
3-24
3-25
3-26
3-27
3-28
3-57
3-58
3-29
3-30
3-35×2
3-36
3-34
3-48
3-49
3-54
3-37
3-38
3-39
3-40
3-41
3-42
3-31
3-32×2
3-33
3-34
3-51×4
3-50×4
3-49
3-48
3-43
3-44
3-45
3-46
3-47×4

7. Adjustment of mirror angle (45°)

a. Adjust the base plate of a collmater (Gokosha Model 24LT - 2D) in parallel.

b. Set the lens mount base on the special tool (J10633).

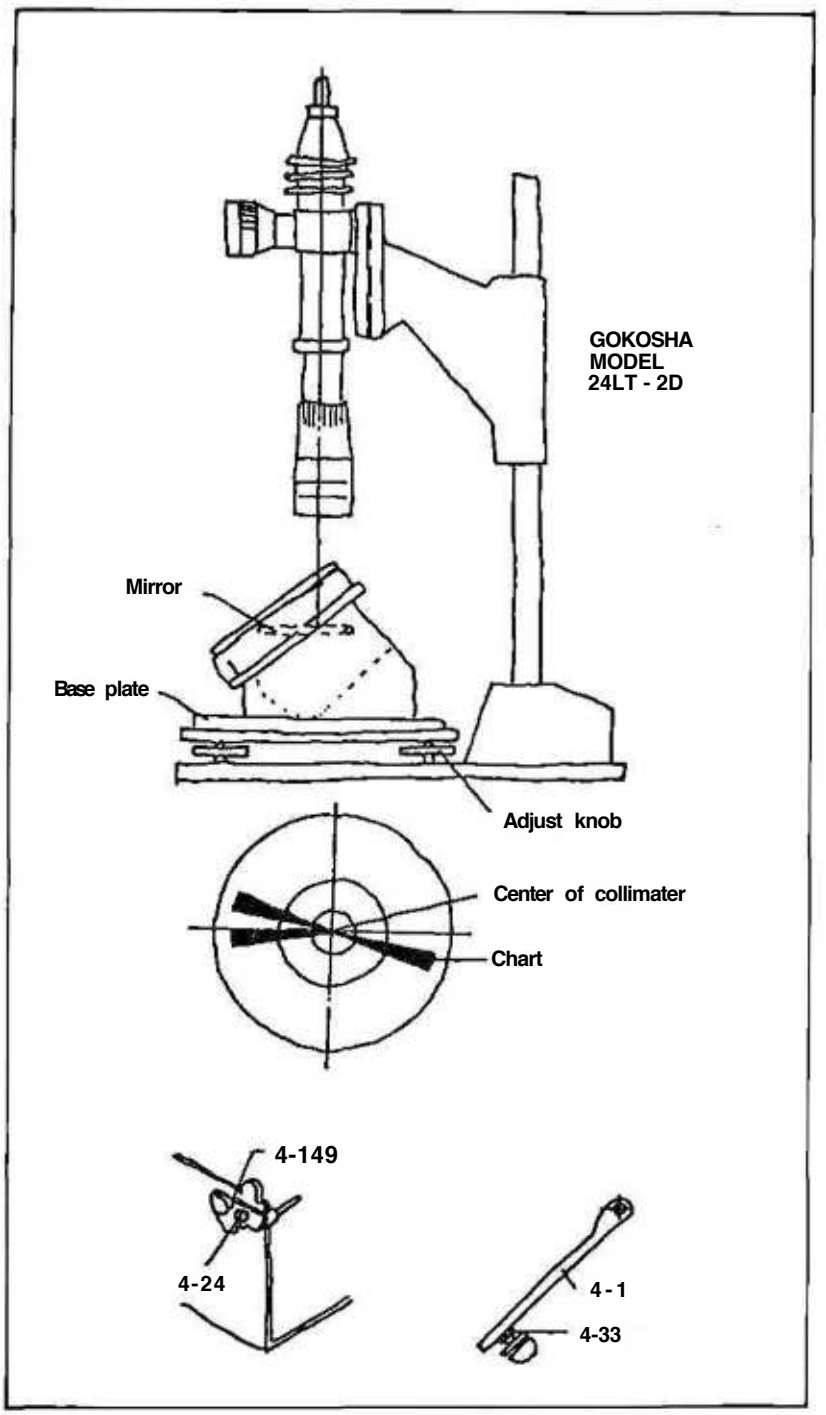
c. Loosen the screw (4 - 24), and adjust the shaft holder (4 -149) to adjust parallelism of the mirror,

d. Adjust 45° angle of the mirror with the screw (4 - 33).

e. When the adjustment is completed, retighten the screws (4 - 24 and 4 - 33) securely and lock them with screw locking agent.

f. Adjust 45° angle of the mirror based on the installation hole of the lens mount.

Fig. 51


GOKOSHA
MODEL
24LT - 2D
Mirror
Base plate
Adjust knob
Center of collimater
Chart
4-149
4-24
4-1
4-33

8. Installation of lens mount base assembly and adjustment of flangeback

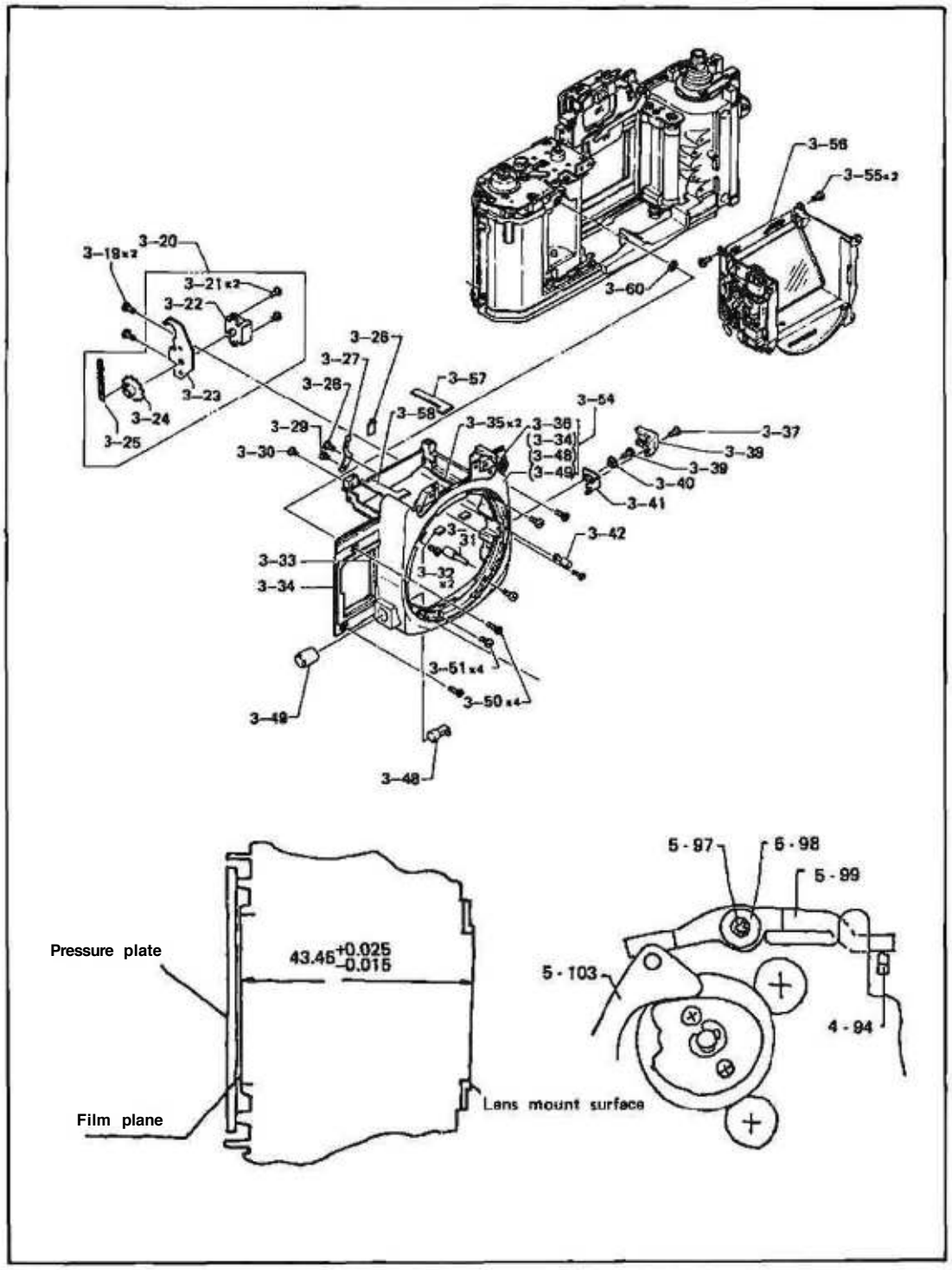
a. Install the lens mount base assembly on the camera body carefully so that lead wire is not held between them.

b. Adjust flangeback to 43.45 $^{+0.025}_{-0.015}$ mm by selecting a proper washer (3 - 60).

NOTE: When the actual flangeback exceeds the limit, properly cut the camera body and lens mount installation surface with a file.

c. Check the release lever (5 - 99) for its installing position, and install the release lever.

Fig. 52


3-56
3-55×2
3-60
3-18×2
3-20
3-21×2
3-22
3-23
3-24
3-25
3-26
3-27
3-26
3-57
3-58
3-29
3-30
3-35×2
3-36
(3-34)
(3-48)
(3-49)
3-54
3-37
3-39
3-39
3-40
3-41
3-42
3-31
3-32×2
3-33
3-34
3-51×4
3-50×4
3-49
3-48
Pressure plate
43.46 +0.025 −0.015
Film plane
Lens mount surface
5-97
5-98
5-99
5-103
4-94

9. Installing magnet base plate assembly (5 - 73) and attracted pieces

9 -1 Installation of magnet base plate

a. Install the magnet base plate assembly with three screws (5-74).

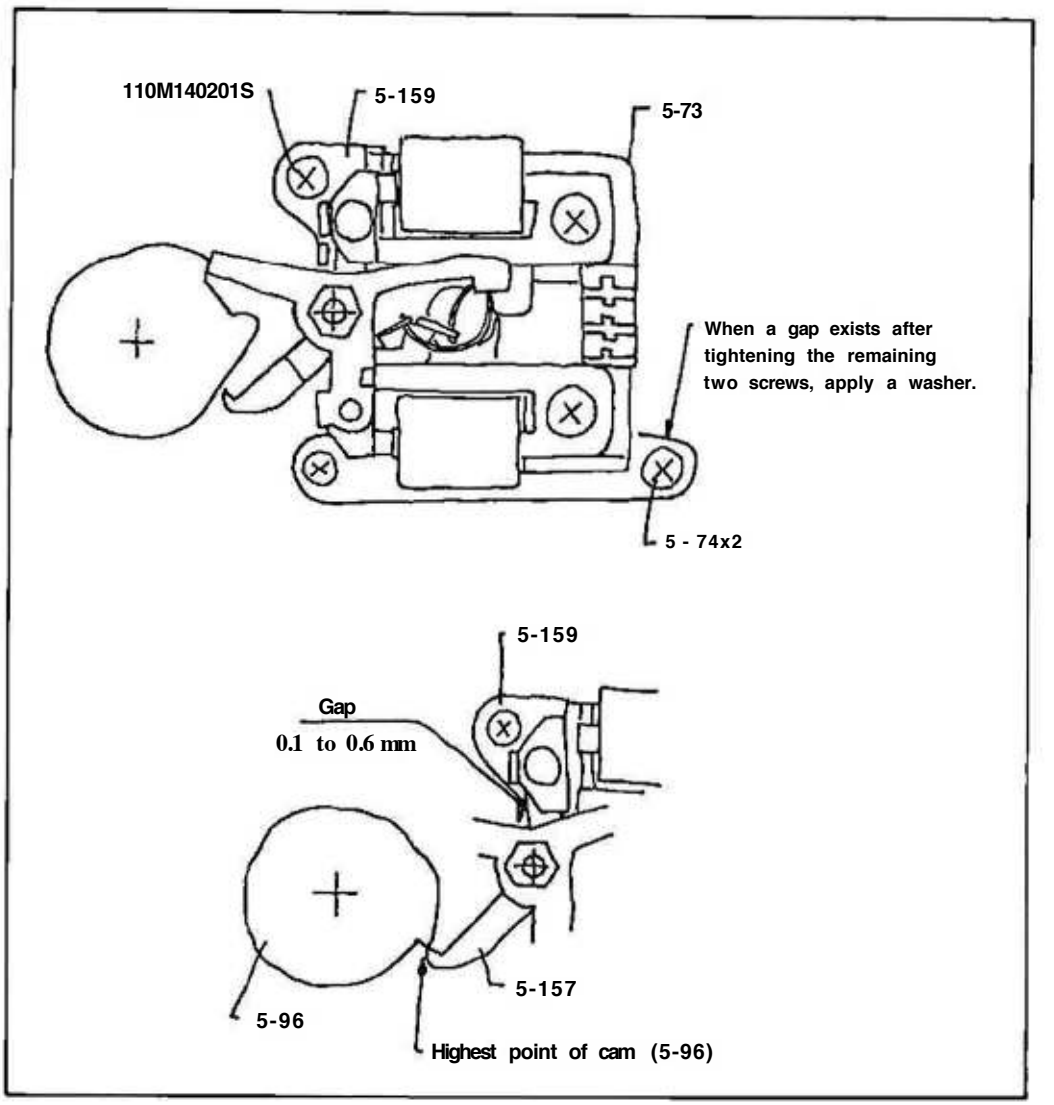
b. For the portion where the stop lever (5 -159) is installed, use a screw (110M140201S) which is 0.5 mm longer than others.

NOTE: Do not use a screw having a length longer than the length of this screw or otherwise, the projected parts will drag on the screw. Then the shutter may not be set or quick return mechanism may not be set.

c. Install the magnet base plate assembly in such a position as that the gap between the stop lever (5 -159) and 1st blind lever (5 -157) is widest.

NOTE: The cam (6-96) and stop lever (5-159) should not hold the 1st blind lever (5-157) during winding - up operation.
When correction is required, properly adjust bending of the stop lever (5 - 159). If this condition occurs, timing required in releasing the cam (5-96) by the 1st blind lever (5-157) delays and an interval capacitor for adjustment of timing having a larger capacity will be required.

Fig. 53


110M140201S
5-159
5-73
When a gap exists after tightening the remaining two screws, apply a washer.
5 - 74x2
5-159
Gap
0.1 to 0.6 mm
5-157
5-96
Highest point of cam (5-96)

9 - 2 Installing attracted pieces (5 -149 and 5 -155)

a. Charge the focal plane shutter.

b. Check the 2nd blind hook for depth of the engagement.
The depth of engagement should be a half or more of the tooth width of the cam plate (5-83) and the 2nd blind hook should not reach the tooth bottom.
When correction is required, loosen the screw (5 -142) and adjust position of the iron core (5 -143). When the adjustment is completed, be sure to retighten the screw (5-142).
When this engagement is insufficient, the 2nd blind will not be held correctly and a shutter speed faster than the selected shutter speed will be resulted.

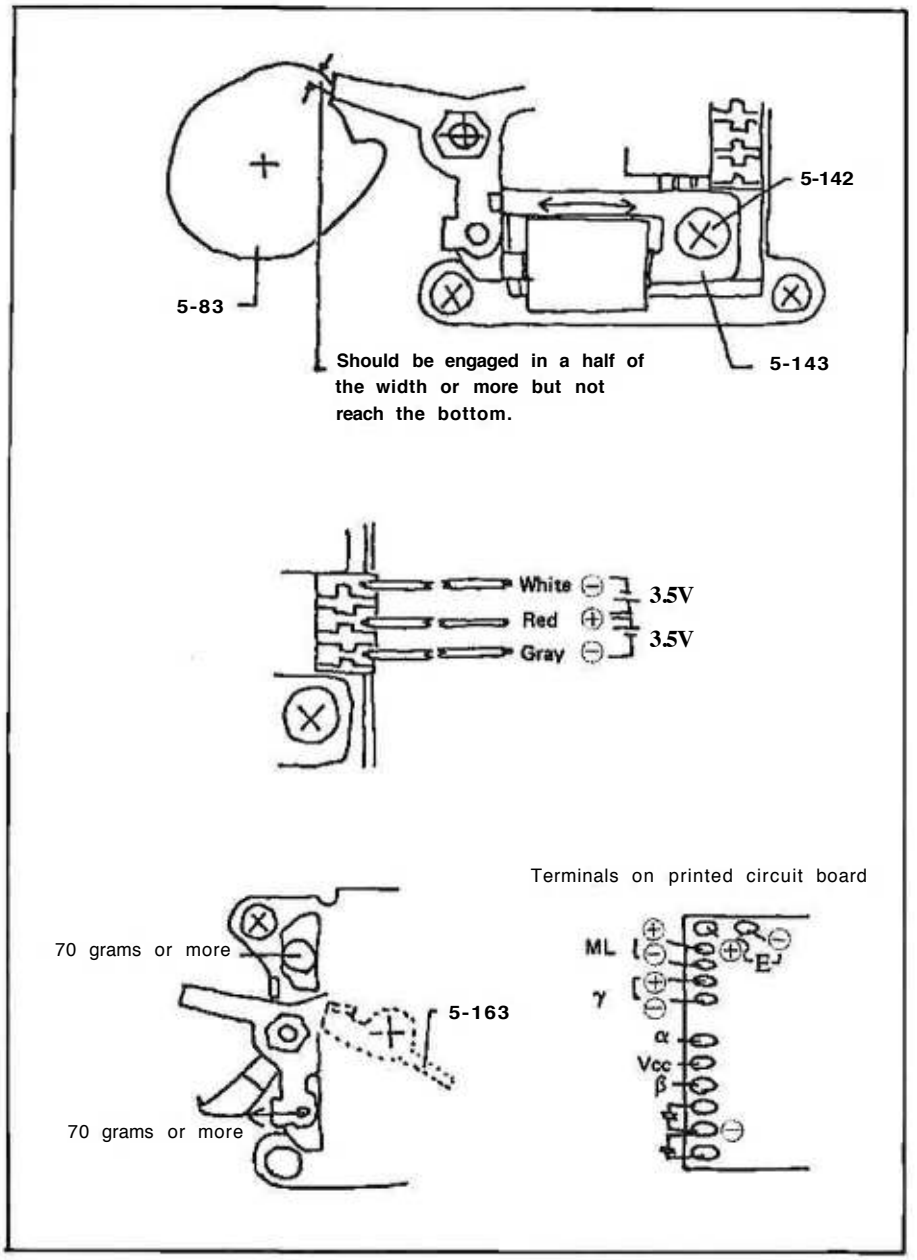
c. Apply DC 3.5V to the coils of the α and β magnet of the magnet base plate assembly (5 - 73).

d. Set the release lever (5 - 163) to the release position.

NOTE: When the camera is assembled completely, apply DC 3V to the terminals of the γ magnet. The release lever (5 -163) will then be set to the release position.

e. Check attracting forces of both the α and β magnets.
At the attracted piece, the attracting force should be 70 grams or more. When correction is required, check the base plate for warping, check the magnet alone for attracting force, and repair or replace.
When attracting force is insufficient at the 1st blind side (α magnet), shutter speed will become too long, or when attracting force is insufficient at the 2nd blind side (β magnet), shutter speed will become too short.

Fig. 54

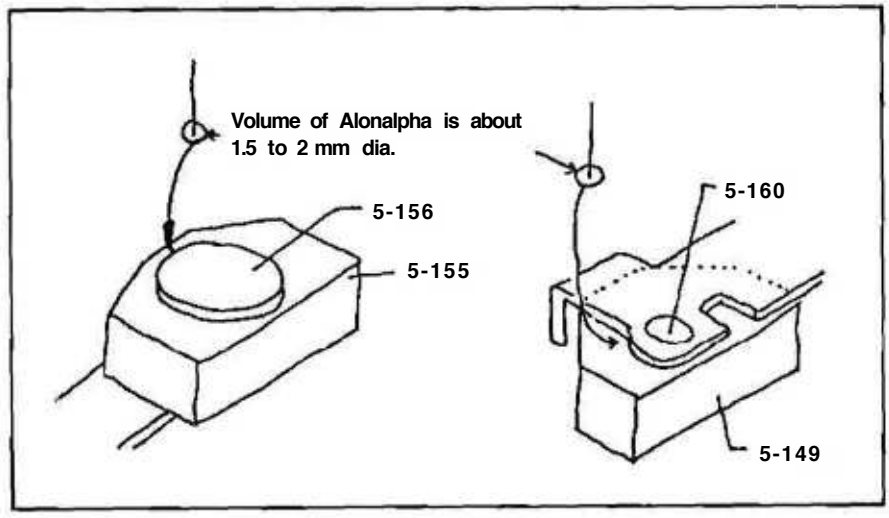

5-142
5-83
5-143
Should be engaged in a half of the width or more but not reach the bottom.
White
Red
Gray
3.5V
3.5V
Terminals on printed circuit board
70 grams or more
5-163
70 grams or more
ML
γ
α
Vcc
β

f. Install the attracted pieces (5 -149 and 5 -155) with Alonalpha (adhesive) as described below.

- o Wind up the focal plane shutter completely.
- o Apply DC 3.5V to α and β magnets.
- o Set the release lever (5 -163) to the release position.
- o Now, install the attracted pieces with Alonalpha.

CAUTION:
- o Do not apply Alonalpha excessively.
- o Hold the attracted pieces as they are at least 10 seconds after installing them.
- c Be careful not to allow Alonalpha impregnating into the attracted surface. Be sure to impregnate Alonalpha between the attracted piece supporting shaft (5-150, 5-156) and attracted piece (5 -149, 5 -155).
- o To wipe off Alonalpha, use acetone $(CH_3)_2CO$.

Fig. 55


Volume of Alonalpha is about
1.5 to 2 mm dia.
5-156
5-155
5-160
5-149

10. Adjustments of shutter blind traveling velocity and shutter speed

For the rated values, refer to the table shown in the right hand page.

10-1 When the amplifier built in the camera is not used.

a. Use a standard time generator.

b. Connect the standard time generator to the M - circuit board assembly (2-64) by soldering lead wires.

c. Apply signal of 1/60 sec. (15.6 ms), and adjust traveling velocities of the 1st and 2nd blinds respectively to 12.0 msec and 12.8 msec.

NOTE: At 1/1000 sec. shutter speed, traveling velocity of 2nd blind is also 12.0 msec.

d. Apply signals of 1/500 sec. and 1/1000 sec. to the camera, and select a capacitor (7-43) having the adequate capacity so that the rated values are satisfied.

NOTE: At 1/1000 sec. shutter speed, try your best to obtain 1.0 msec.

- Match traveling velocity of the 1st blind with that of the 2nd blind.
- Note that when the traveling velocity of the 2nd blind is matched with that of the 1st blind at 1/1000 sec. shutter speed, the traveling velocity of the 2nd blind becomes slower than that of the 1st blind at a slower shutter speed. For example, it will become about 0.8 msec. slower at 1/60 sec, shutter speed.

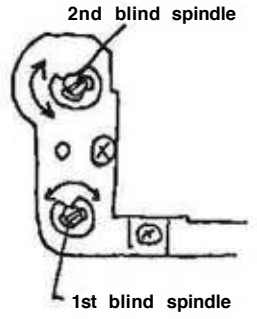
e. When 0.5 msec. is measured with 1/500 sec. shutter speed signal appiied to the camera without using capacitor, it is most ideal.
When 0.5 msec. is not measured, add a capacitor after checking the followings.

- Overlap value of the metal fixtures of the 1st and 2nd blinds.
- 0 Attracting force of the (3 magnet (for 2nd blind)
- Position of the stop lever (5 -159).

f. Adjustment of synchro - delay time (X - contact)

- Rating for inspection: 0.4 msec. to 2.0 msec.
- Adjust it by bending the contact piece (5 -138) at 1/60 sec. shutter speed.

Fig. 56



Traveling velocity of the blind becomes faster as the spindle is turned clockwise.

Traveling velocity of the blind becomes slower as the spindle is turned counterclockwise.

Unit of measure ms

Shutter speed	Adjusting range	Standard for inspection	Standard for exported model
$\frac{1}{1000}$	0.8 - 1.25	0.65 - 1.37	0.58 - 1.64
$\frac{1}{500}$		1.43 - 2.67	1.16 - 3.28
$\frac{1}{250}$		2.86 - 5.37	2.32 - 6.57
$\frac{1}{125}$		5.92 - 10.7	4.65 - 13.1
$\frac{1}{60}$		11.4 - 21.3	11.0 - 22.1

Fig. 57

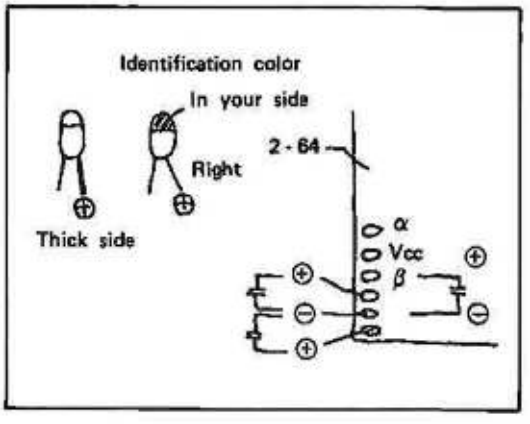
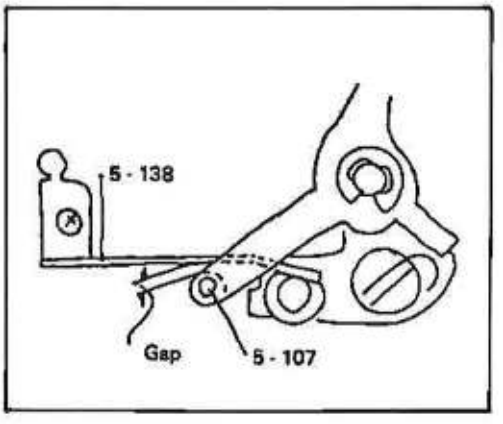


Fig. 58



10 - 2 When the amplifier built in the camera is used.

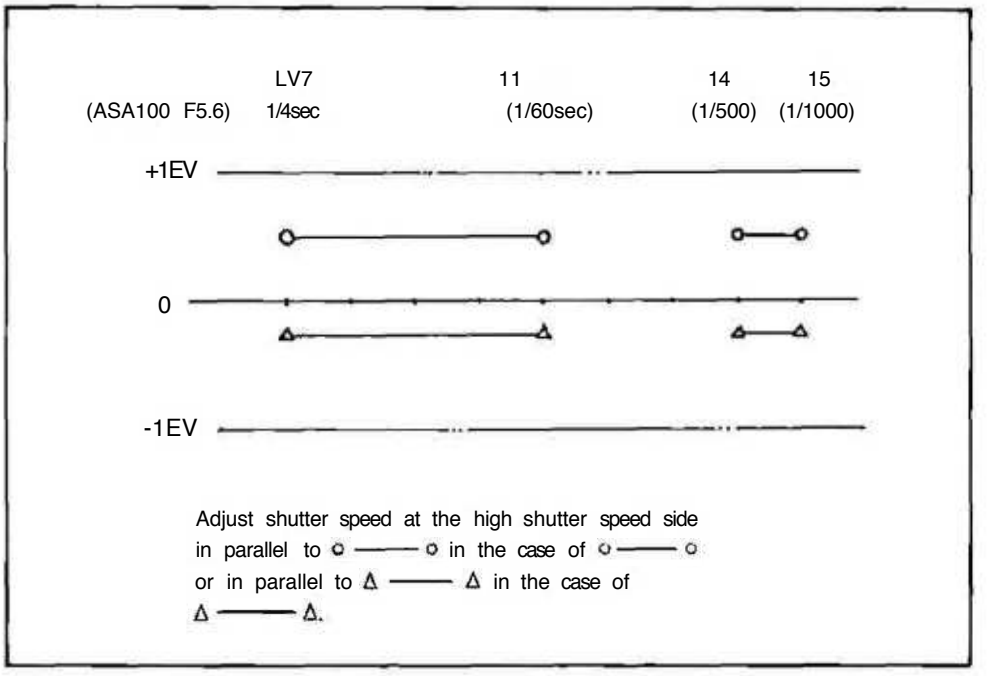
a. Use a shutter tester and adjust 1st and 2nd shutter blind traveling velocities and shutter speed as indicated below.

- o Set the shutter speed selector dial to 1/60 sec.
- o Adjust 1st and 2nd shutter blind traveling velocities to 12.0 msec. and 12.8 msec. respectively.
- o Set the shutter speed selector dial to "AE", and move the aperture transmission ring properly so that the LED between 1000 and 500 flashes in the viewfinder.
- o With the shutter release button depressed in a half way (AEL mode), select a proper interval capacitor sot that the shutter tester counts about 0.8 msec (1 msec to 0.6 msec.).

b. Checking exposure value

- o With an exposure tester, measure exposure levels at LV11 and LV7.
- o Select a proper interval capacitor so that exposure levels at LV14 and LV15 are in parallel to the exposure levels measured as above. When correcting center value (level), adjust level of the amplifier.

Fig. 59

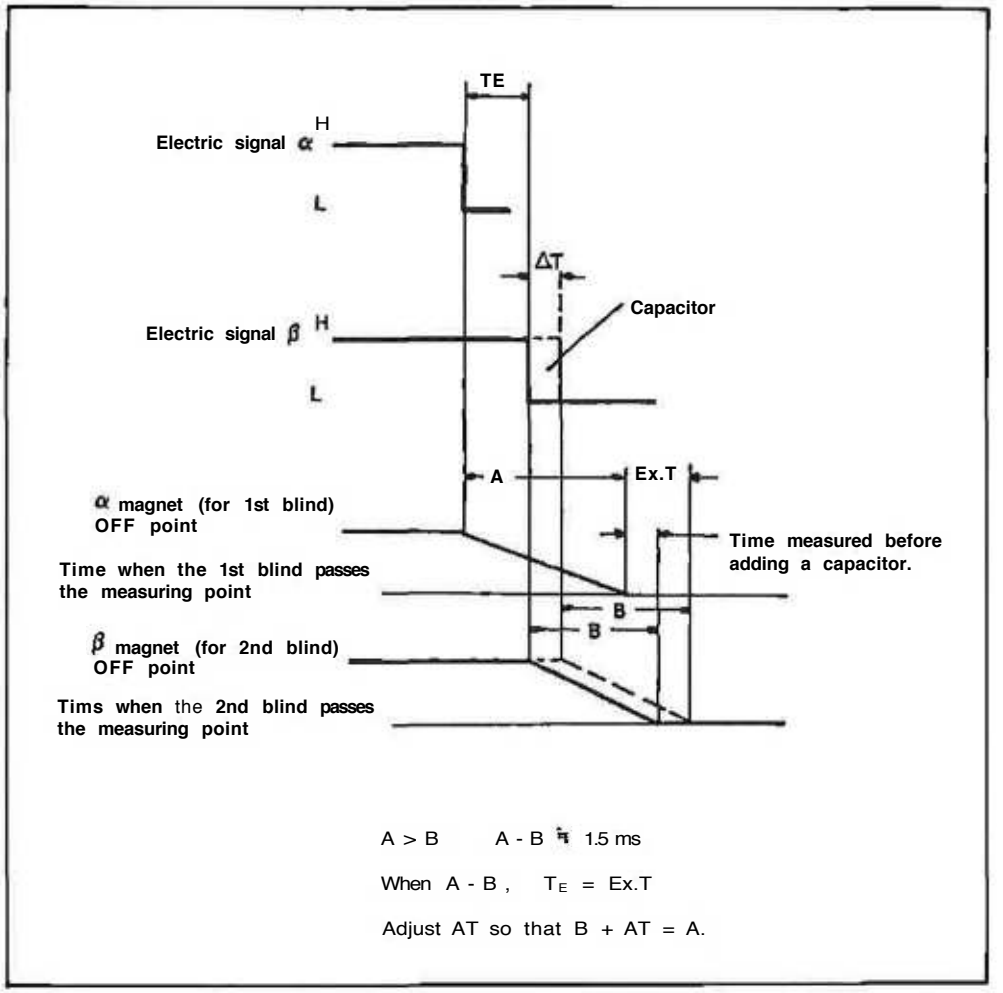

LV7
11
14
15
(ASA100 F5.6)
1/4sec
(1/60sec)
(1/500)
(1/1000)
+1EV
0
-1EV
Adjust shutter speed at the high shutter speed side in parallel to o —— o in the case of o —— o or in parallel to Δ —— Δ in the case of Δ —— Δ.

10 - 3 Capacitor (7 - 43)

- o The 1st and 2nd blinds are controlled by electric signals α and β respectively.
- o Electrically, 1 msec. time deviation always exists between the α and β signals at 1/1000 sec. shutter speed.
- o Mechanically (relationship between magnet and shutter blind), the time required by the 1st blind in passing the time measuring point differs from that by the 2nd blind, and time required by the 2nd blind is 1.5 to 1.0 msec. shorter than that by the 1st blind,
- o A delay time provided by a capacitor is added to the actual time provided by the amplifier by applying the capacitor to the β signal line so that the time difference of the amplifier is balanced with that of the shutter blind.
- o Capacitors of the following capacities are available for this purpose.

0.047 μF
0.068 μF
0.1 μF
0.22 μF
0.33 μF
0.47 μF

Fig. 60



A > B A - B ≒ 1.5 ms

When A - B , T_E = Ex.T

Adjust AT so that B + AT = A.

10 - 4 Typical examples of trouble and probable causes

a. Approximately 15 msec. are counted at 1/1000 sec.

Cause: o Coil of α magnet (for 1st blind) is broken or attracting force of the α magnet is insufficient.

b. Shutter blind does not open.

Cause: o Coil of β magnet (for 2nd blind) is broken or attracting force of the β magnet is insufficient.

o Insufficient claw engagement.

Corrective action: o To recover attracting force of the magnet, clean the attracted piece.

o Set shutter speed to "B" to move the iron core to the attracting position, and with the shutter speed "B" maintained, retighten the set screw.

c. Both the 1st and 2nd blinds do not run.

Cause; o γ magnet does not operate.

o Improper position of the slop lever (5 - 159)

o Relase tever (5 - 163) does not operate.

d. 1/1000 sec. shutter speed fluctuates.

Cause: o Insufficient attracting forces of α and β magnets.

o insuffucuent holding forces of α and β magnets.

o Attracted piece is not fixed securely.

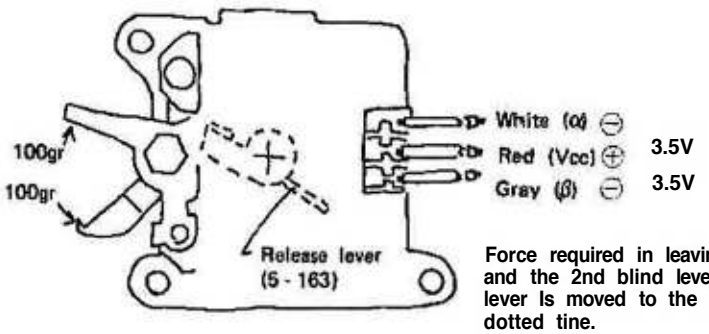
e. The 1st blind opens when wound up rapidly.

Cause: o Insufficient engagement of 1st blind hook and improper height.

o Release lever (5 - 163) of the magnet moves when winding up the shutter blind.

Fig. 61

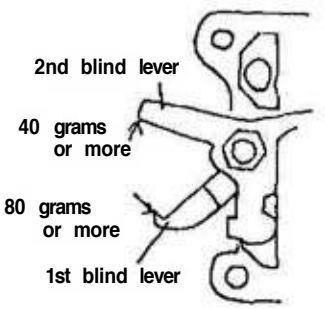
Attracting force



Force required in leaving the 1st blind lever and the 2nd blind lever when the release lever Is moved to the position shown by the dotted tine.

Fig. 62

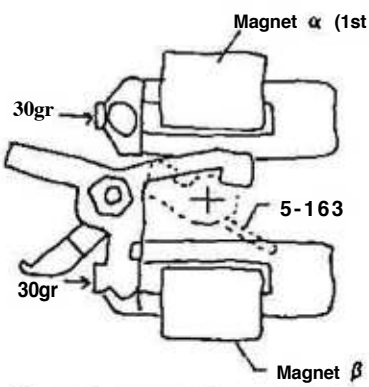
Holding force



Force required in separating the attracted piece from the iron core when a force is applied toward arrow mark direction.
NOTE: The release lever is in the free state.

Fig. 63

Repulsive force



A repulsive force should be generated when 30 grams are applied as shown in the left hand figure to turn the release lever (5-163} 30 to 36°.

11. Specifications for time magnet (a content of 5-73)

a. Attracting force: 200 grams or more with DC 3.5V applied.
When this magnet is built in the assembly (5 - 73), 100 grams or more at the designated point.

b. Holding force: 1st blind lever: 80 grams or more
2nd blind lever: 40 grams or more

c. Repulsive force: With the release lever turned 30 to 35°, 30 grams or more

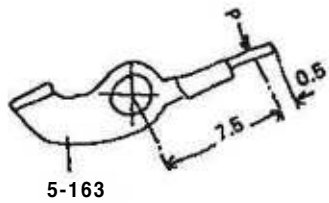
d. Release lever driving force: 110 grams or less

e. Release lever gap: 0.2 to 0.5 mm against the base plate.

f. daw position: 1/2 to 1/3 engagement against the cam; Should oppose the cam center.

Fig. 64

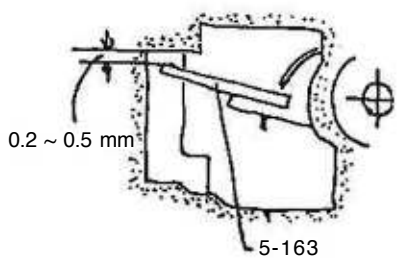
Release lever driving force



Force required in turning the release lever (5-163) with the attracted piece attracted. 110 grams (max.)

Fig. 65

Release lever gap

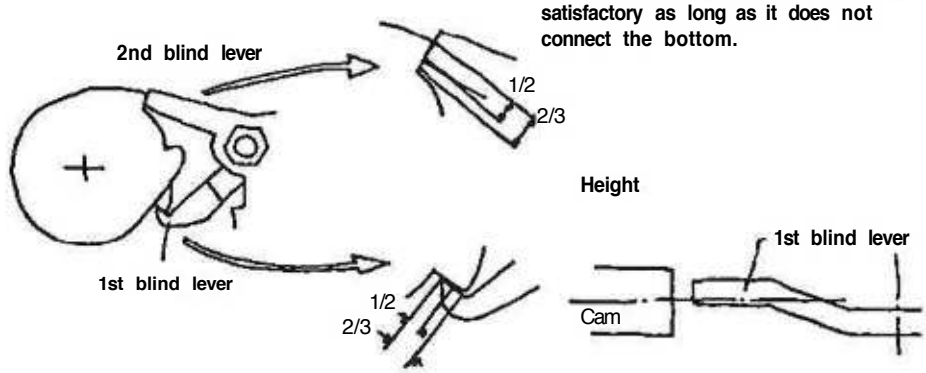


With the release lever freed, a gap (0.2 to 0.5 mm) should exist against the base plate.

Fig. 66

Claw position

For the deeper side, claw position is satisfactory as long as it does not connect the bottom.



12. Viewfinder

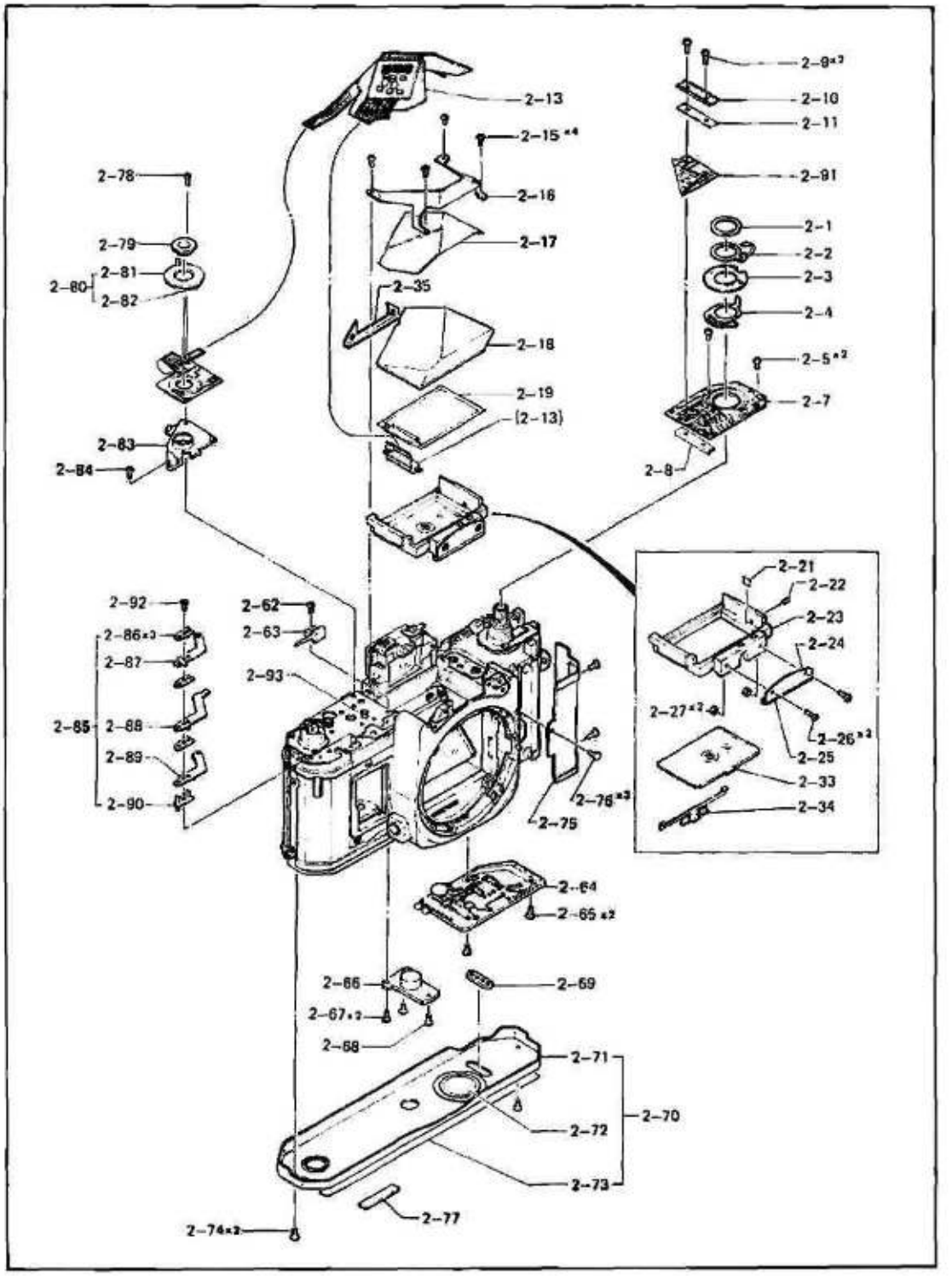
12-1 Installing eyepiece assembly (6-6)

- o Install the eyepiece assembly (5 - 6) on the camera body with two screws (5 - 5).
- o Check the eyepiece shutter assembly (5 - 9) to insure that it operates smoothly.

12-2 Adjustment of focusing

- o Assemble the penta prism (2 -18) with the prism case assembly (2 - 20) temporarily, and make sure that the split images seen in the viewfinder are matched.
- *o* When adjustment is required, adjust thickness of the washers (3 - 57 and 3 - 58).
- o When adjusting, lightly hold (about 100 grams) the penta prism (2-18).
- o When proper washers are selected, secure them with Pliobond.
- o When adjusting the focusing, mount an F1.6/55 mm lens.

Fig. 67


2-13
2-15 ×4
2-16
2-17
2-35
2-18
2-19
(2-13)
2-78
2-79
2-81
2-80
2-82
2-83
2-84
2-9 ×3
2-10
2-11
2-91
2-1
2-2
2-3
2-4
2-5 ×2
2-7
2-8
2-21
2-22
2-23
2-24
2-27 ×2
2-26 ×2
2-25
2-33
2-34
2-92
2-62
2-63
2-93
2-86 ×3
2-87
2-85
2-88
2-89
2-90
2-76 ×3
2-75
2-64
2-65 ×2
2-66
2-67 ×2
2-68
2-69
2-71
2-72
2-70
2-73
2-77
2-74 ×2

13. LED display and field of view in the viewfinder

a. Make sure that LEDs can be seen clearly.

b. Make sure that an over - exposure warning is displayed by the flashing 1000 - 500 dots. Make sure that an under - exposure warning is displayed by the flashing 4 - 2 dtos.

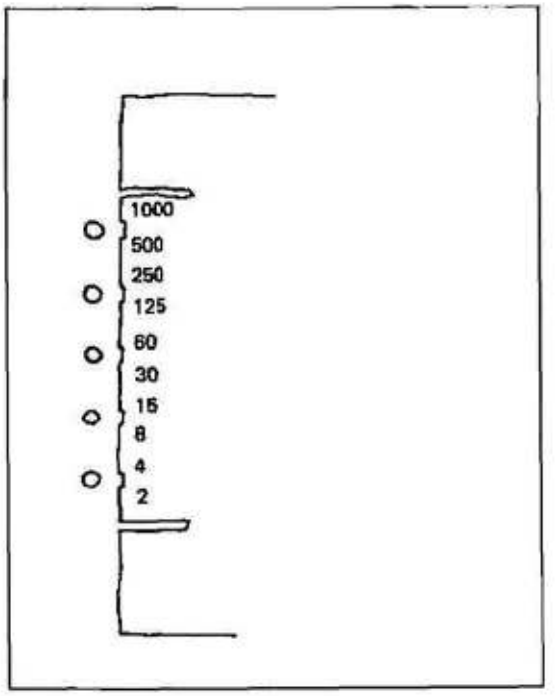
c. Applicable photographing mode of each lens

New lenses (except for super telephoto lens) — Aperture - priority AB

New lens (super telephoto lens)
conventional lens + Adapter
Auto Bellows
Microscope adapter
Reverse adapter
— Stopped - down AE

d. Make sure that the power supply is normal. When power supply is normal, a lit LED will light intermittently. When the camera is in "B" mode, 2 - 4 LED will flashes.

Fig. 68



14. Installing electrical parts and wiring

14-1 Installing parts

a. Printed circuit board (110B280610).

- o Place the printed circuit board (110B28O610) on the base (2-83) by inserting the positioning pin on the base into the hole on the printed circuit board.
- o Tighten the screw (2 - 78) to secure the printed circuit board on the base.
- o Place the contact base assembly (2 - 80) on the printed circuit board, and install the holder (2 - 79) carefully so as not to break the printed circuit board.

b. E11-2 circuit assembly (2-7)

- o Install myler sheet (2 -100) on the bottom of the E11 - 2 circuit assembly (2-7) with adhesive.
- o Install the channel plate A (2-8) on the myler sheet (2-100) with adhesive. Make sure that the channel plate A (2-8) is insulated with the E11 - 2 circuit assembly (2 - 7).
- o Secure the E11 - 2 circuit assembly on the channel plate A with two screws (2 - 5).
  Carefully so as not to break the E11 - 2 circuit assembly (2-7).

c. Connecting connector

- o Match the pattern of the E11 - 2 circuit assembly (2 - 7) with that of the flexible printed circuit board (2 -13).
- o Secure them with two screws (2-9) through the rubber cushion (2-11) and channel plate 6 (2 -10).
  Make sure that all the patterns have continuity.

Fig. 69

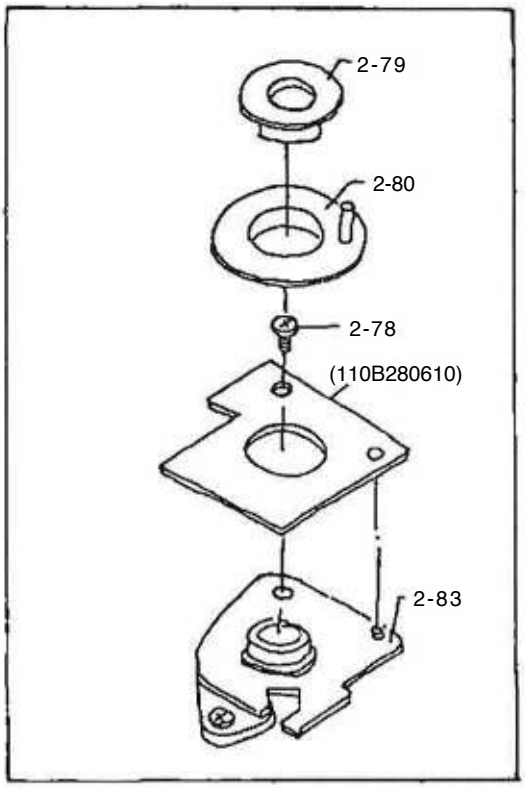


Fig. 70

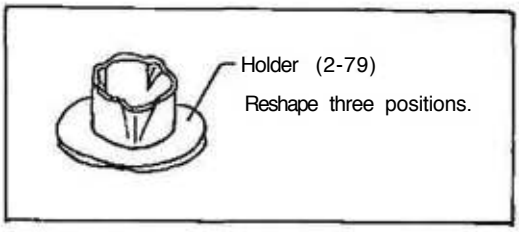


Fig. 71

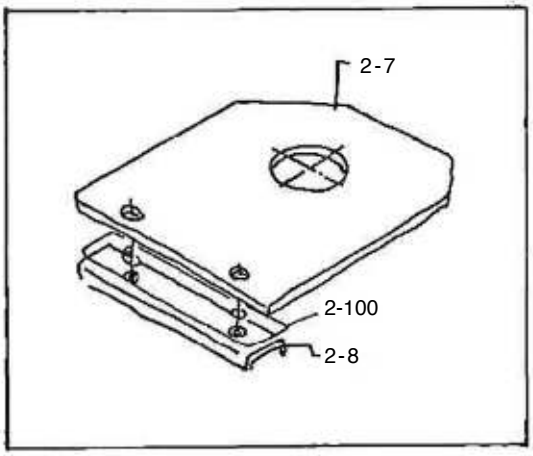
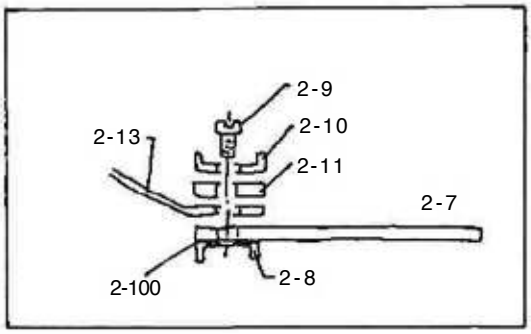


Fig. 72



d. Installing A -brush assembly (2 - 4) and S - brush assembly (2 - 2)

- o Install them around the rewind spindle assembly (6-107).
- o Combine the A - brush assembly (2 - 4), insulation plate (2 -3), S - brush assembly (2 - 2) and fix ring (2-1) in that order.
- o Install the fix ring (2-1) with the mat side faced upward.
- o Make sure that the brush moves smoothly.
- o Make sure that the brush is in firm contact with the printed pattern of the E11 - 2 circuit assembly (2 - 7).

e. Installing S3 switch (2-63)

Install the S3 switch so that:

- o It turns off when the shutter is released.
- o It turns on when the shutter is charged completely.
  With this switch turned off, the shutter cannot be released.
  With this switch turned on, the shutter can be released.
  When the film advance lever is turned in a half way with this switch turned on, the shutter is released before winding up the film advance lever completely.

Fig. 73

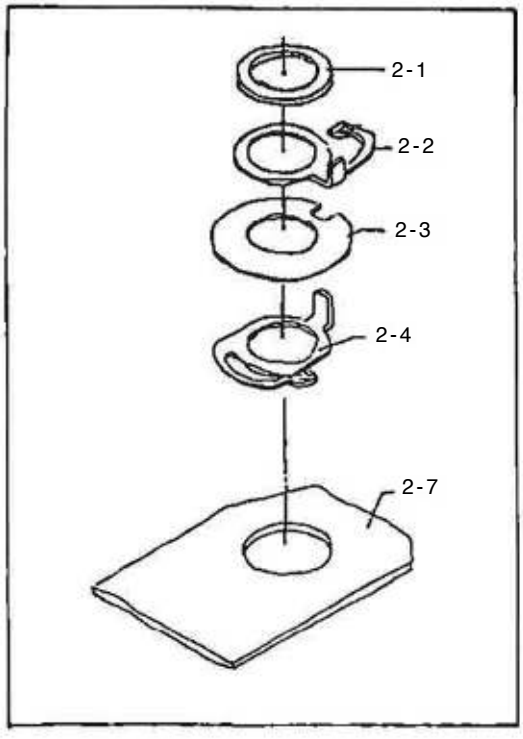


Fig. 74

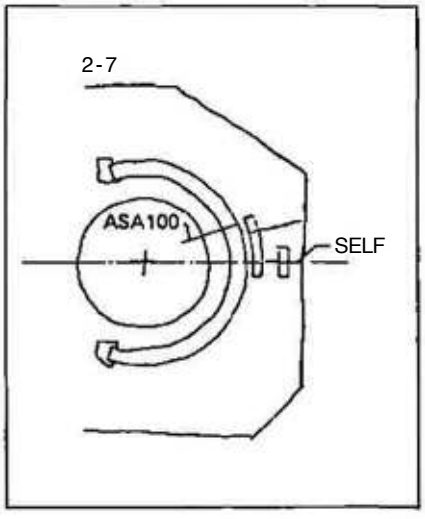
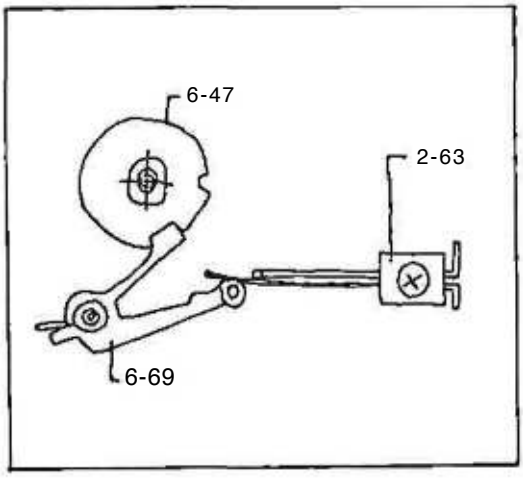


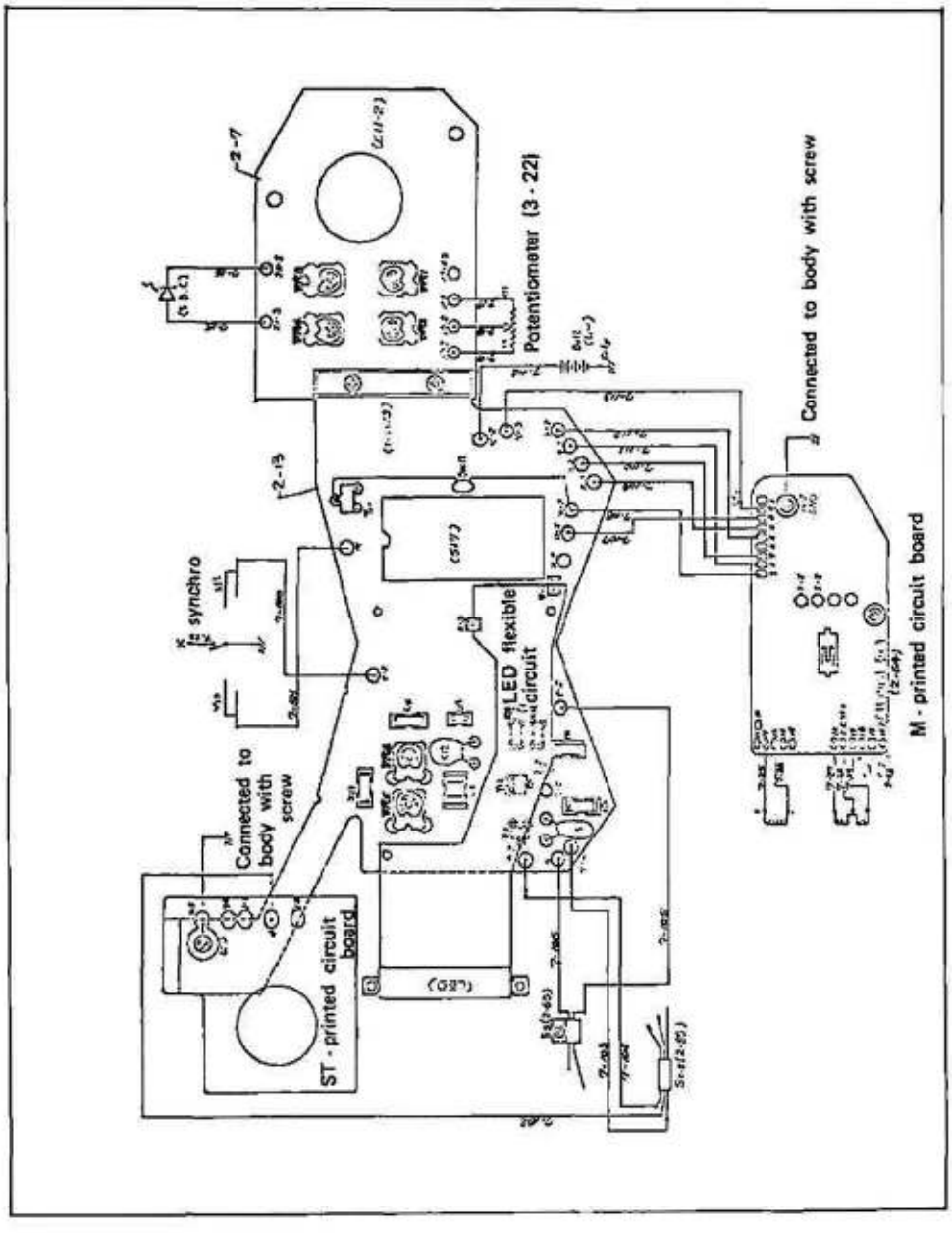
Fig. 75



14-2 Wiring

- o Refer to the wiring diagram and perform wiring correctly.
- o Carefully arrange lead wires so that no lead wire is held between parts.
- o When the lead wire (7 - 16) extended from the CdS (5-4) is connected to the E11 - 2 circuit assembly (2 - 7) by means of a soldering, apply silicon rubber to guarantee the insulation after cleaning the soldered portion with isopropyl alcohol.
  When replacing the Si cell with a new one, be sure to disconnect the lead wire at the Si cell side, and clean the connected portion after soldering.

Fig. 76


Potentiometer (3 - 22)
Connected to body with screw
M - printed circuit board
LED flexible circuit
synchro
Connected to body with screw
ST - printed circuit board

15. Adjustment of electrical system

Variable resistors VR1 through VR6 are used. Out of these variable resistors, VR1, VR5 and VR6 have been completely adjusted at the plant. Do not touch these variable resistors.

Adjust VR2, VR3 and VR4 accurately with DC 5V applied. (A new battery will provide this voltage.)

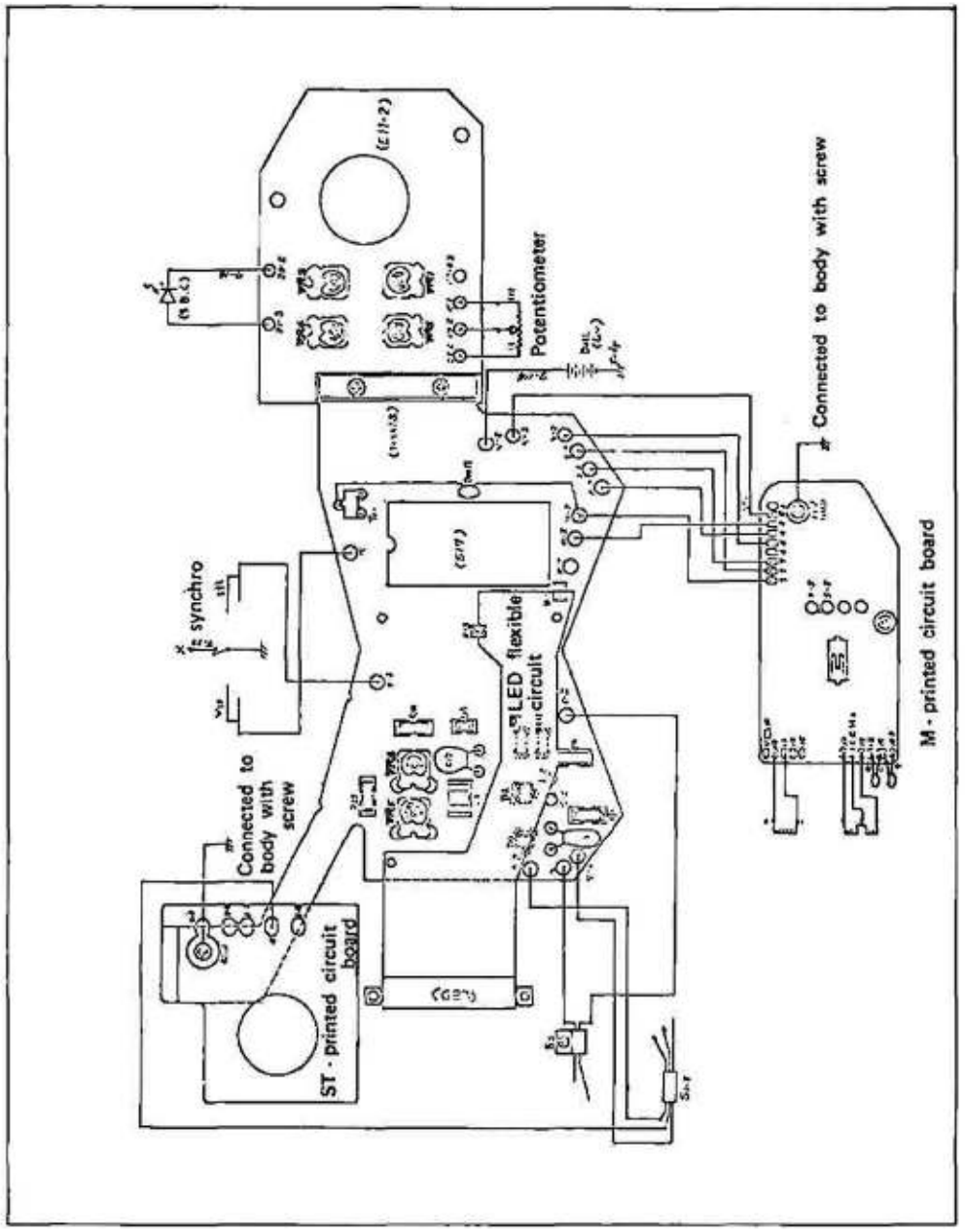
Sequence of Adjustment	Purpose of Adjustment	VR Symbol		Terminal to be Checked	Value to which Adjusted	Remarks
1	Adjustment of frequency	FPC	VR6	IC:31	$32.768^{\pm 0.2}$ KHz	Already adjusted
2	Adjustment of reference voltage	E11-2	VR1	1C: 6 E11 - 2:6	$2.500^{\pm 0.01}$ V	Already adjusted
3	Adjustment of aperture step value	E11-2	VR2	E11 - 2 : 37-2---41	$0.960^{\pm 0.005}$ V	E11-2: Adjust voltage across terminals 37-2 and 41 to 0.960V;
4	Adjustment of V_{gF} voltage	E11 -2	VR3	Standard exposure value	$1.300^{\pm 0.005}$ V	With an F1.6/55mm tens mounted and shutter speed and aperture respectively set to 100 and F5.6, adjust V_{SF} voltage to 1.300V.
5	Adjustment of exposure value	E11-2	VR4		$0.08\ {}_{-0}^{+0.02}$ 1xsec	With operating mode set under AE, shutter speed set to 100, aperture set to F5.6 and light value selected at LV11, adjust exposure to 0.08 1x - sec.
6	Adjustment of exposure step value	FPC	VR5		±1/3EV/ Δ10EV	Already adjusted

NOTE: Normally, do not touch these variable resistors.

Standard exposure value

Luminosity of light source	Standard exposure value	Permissible tolerance
LV7 (89.7 rlx)	0.08 1x-sec	±l EV
LV1l (718 rlx)	0.08 1x -sec	± 1 EV
LV14 (5740 rlx)	0.08 1x - sec	±l EV
LV15 (11480 rlx)	0.08 1x - sec	± 1 EV

Fig. 77


Potentiometer
Connected to body with screw
synchro
LED flexible circuit
Connected to body with screw
ST - printed circuit board
M - printed circuit board

16. Electrical system repairing procedure

Fig. 78

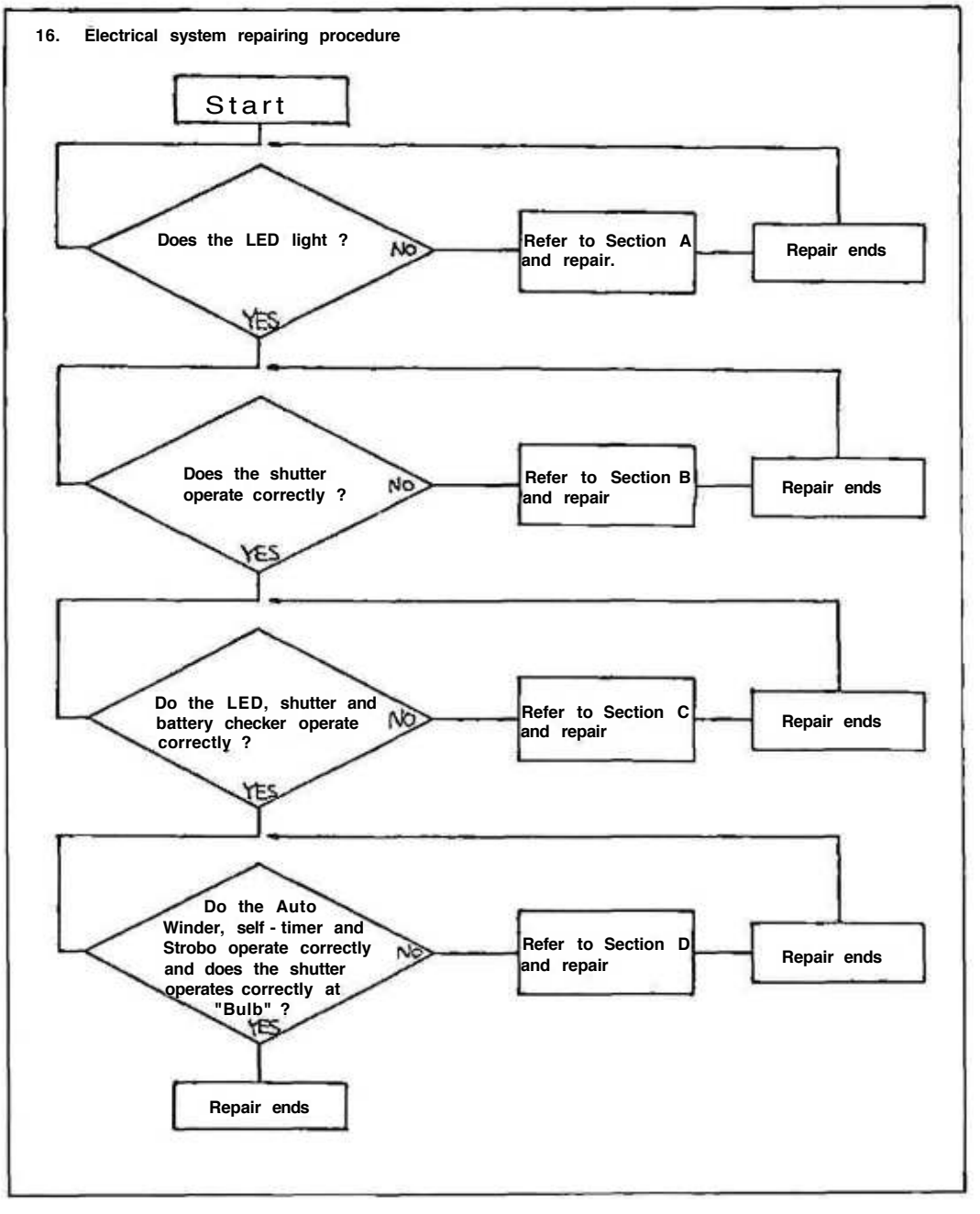


Fig. 79

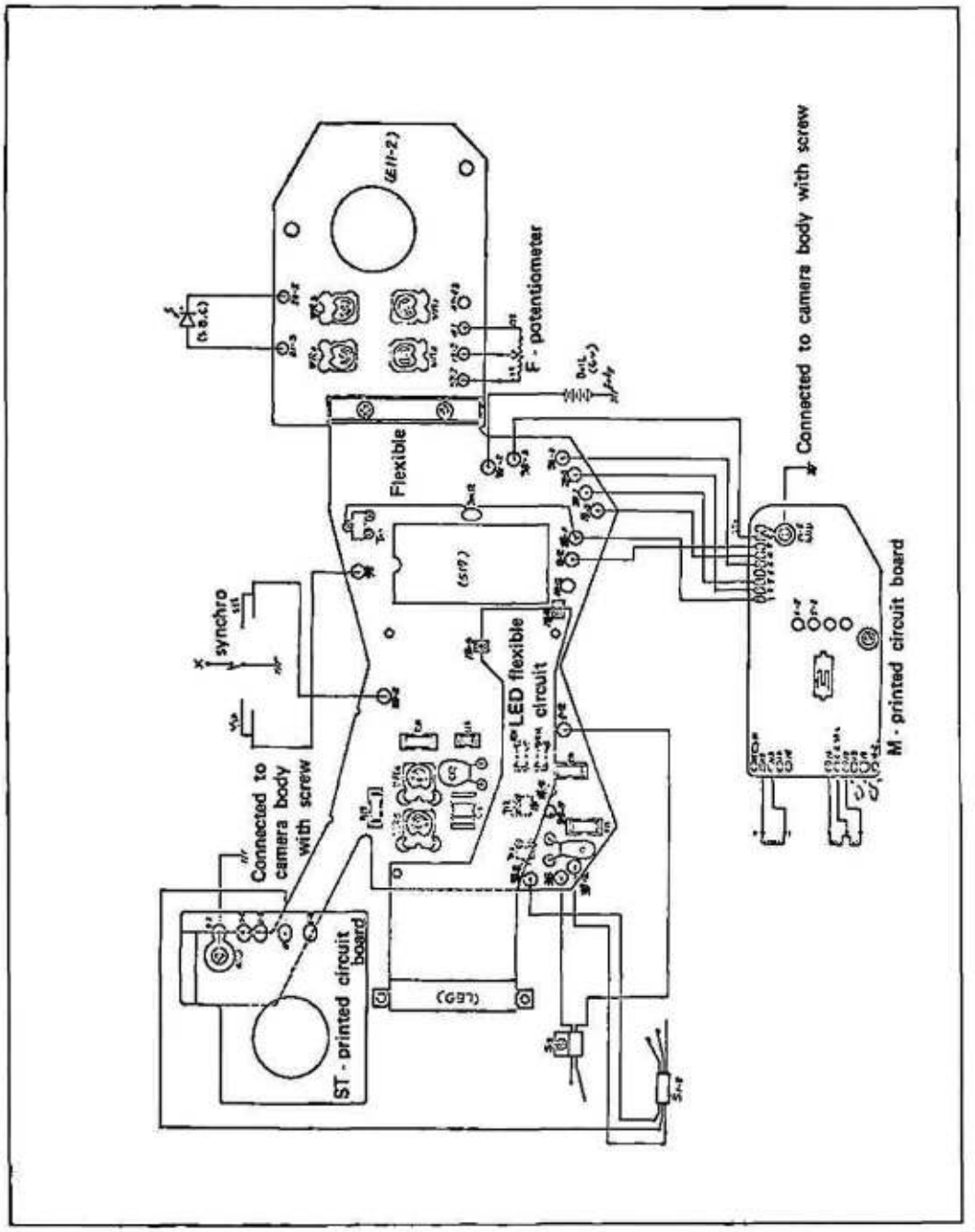
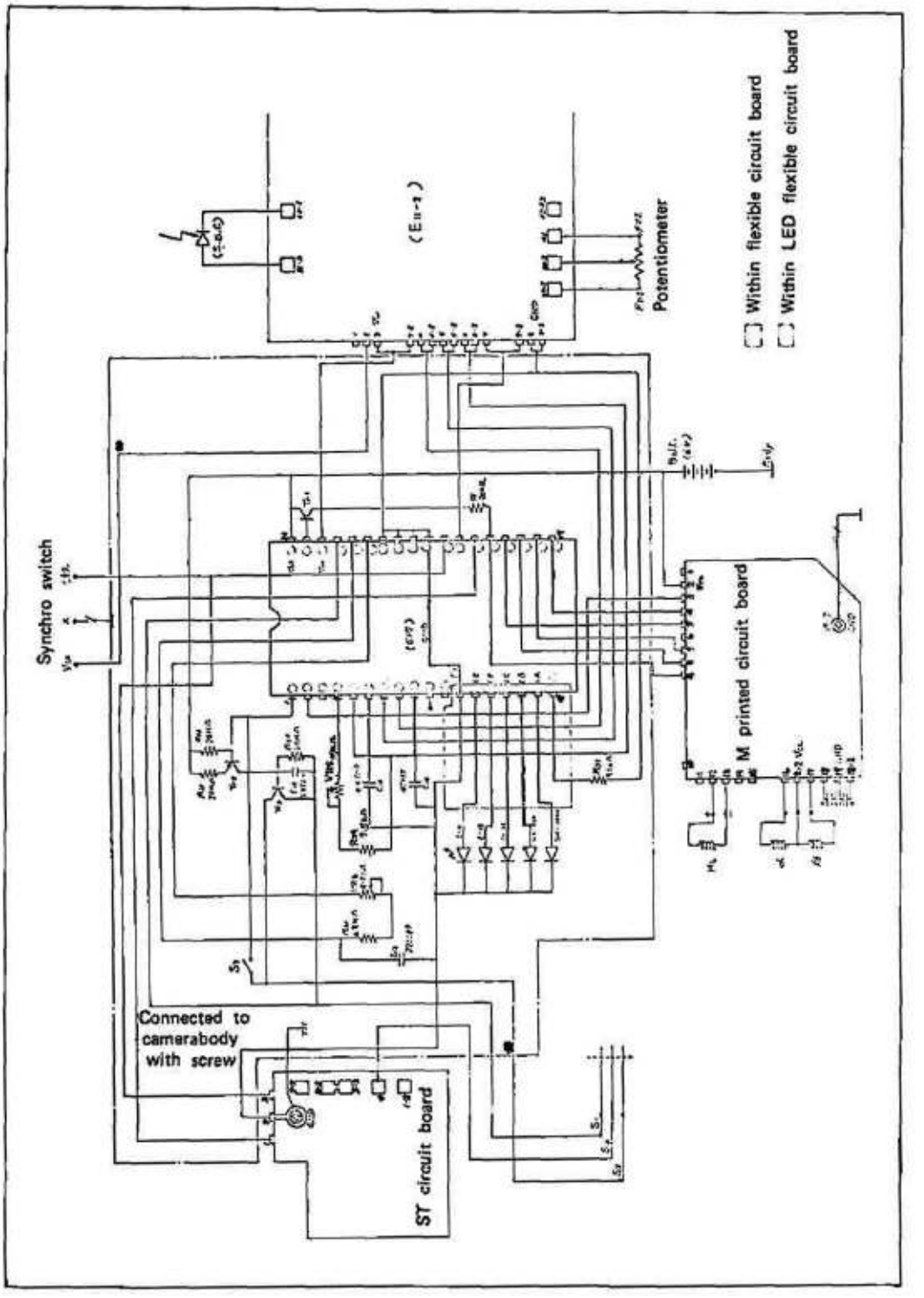

F - potentiometer
Flexible
Connected to camera body with screw
synchro
LED flexible circuit
M - printed circuit board
Connected to camera body with screw
ST - printed circuit board

Fig. 80


Within flexible circuit board
Within LED flexible circuit board
Potentiometer
Synchro switch
M printed circuit board
Connected to camerabody with screw
ST circuit board

GENERAL: Before proceeding to the following inspections, make sure that the loaded battery is normal and that the GND and Vcc lines, SI - 2 switch and ST printed circuit board are normal. When checking voltage or operation, be sure to set the shutter dial and SI - 2 switch to "ON".

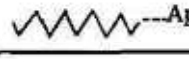
Section A

1. Check voltages on pins 33, 34, 35 and 36 of HA16517, and check the parts, wiring and circuit related to these pins.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
33	Power switch	(S_1 switch) S_1 OFF ..Approx Vcc-1 [V], S_1 ON . . . .Approx 0 [V]
34	Power supply circuit	(circuit power supply) S_1 OFF 0 [V], S_1 ON Approx Vcc — 0.5 [V]
35	Power supply circuit	S_1 OFF Approx Vcc - 0.5 [V], S_1 ON Approx Vcc —0.7 [V]
36	Power supply	Vcc = Battery

When measured voltage is remarkably deviated from the above indicated voltage, check the Trl, ST printed circuit board, S1 - 2 switch and battery, and recheck the wirings related to these parts.

2. Check voltages and waveforms on pins 31 and 32 of the H16517, and check the parts, wiring and circuit related to these pins.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
31	Oscillator circuit	32.768KHz Vcc — 1 [V] 0 [V]
32	Oscillator circuit	32.768KHz  Approx. $\frac{Vcc}{2}$ [VJ

Relative parts. . . . . .C13 (2200PE), R30 (6.8Ω) and VR6 (4.7KΩ)

3. Check voltage on pin 18 of the H16517, and check the parts, wiring and circuit related to this pin.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
18	LED brightness adjusting circuit	Approx. 2V o 1.5 [V]

Relative parts. R31 (9.1KΩ)

4. **Check voltages on pins 12 through 17 of the HA16517, and check the parts, wiring and circuit related to these pins (with S1 switch turned on).**

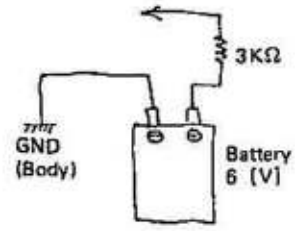
PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
12	GND	GND = 0 (V)
13	LED 2 - 4	Approx. 1.5V when lights up o' Less that 1V when goes out.
14	LED 8 - 1 5	Approx. 1.5V when lights up o Less that 1V when goes out.
15	LED 30 - 60	Approx. 1.5V when lights up o Less than 1V when goes out.
16	LED 125 - 250	Approx. 1.5V when lights up o Less than 1V when goes out.
17	LED 500 - 1000	Approx. 1.5V when lights up o Less than 1V when goes out.

Relative parts. . . . . LED - Flexible Printed Circuit and LED

Method to check LED alone:

(1) Remove the battery from the camera.

(2) Connect these pins to (+) terminal of the battery and ground the (—) terminal as shown below.



5. When 1 through 4 above are completed but still defective or it is found to be unrepairable, replace the flexible printed circuit board assembly with a new one.
NOTE: (With S1 switch turned on = shutter button depressed in a half way)

Section B

GENERAL: Before proceeding to the following inspections, check S1 - 2 switch, ST printed circuit board, S3 switch and self - tinier switch for their correct correct operations and set positions. Particularly, the S3 switch must be turned on when the film advance lever is wound up completely and this switch should not be in contact a metal portion of the camera body.

1. Check voltages on pins 1 and 2 of the HA16517, and check the parts, wiring and circuit related to these pins (with S1 switch turned on and film advance lever wound up completely).

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
1	Shutter start input (with auto - winder combined)	The shutter starts when S2 is turned on. S2 switch OFF: 0.9V or more S2 switch ON: 0.3V or less
2	Shutter start input	Without auto - winder: 0.9V or more

Relative parts.....S1 - 2 switch, S3 switch, Tr2, Tr3, R32 (20KΩ), R34 (20KΩ), and C15 (0.047 μF)
(Tr2 and Tr3 circuits are explained in Section D - *2)*.

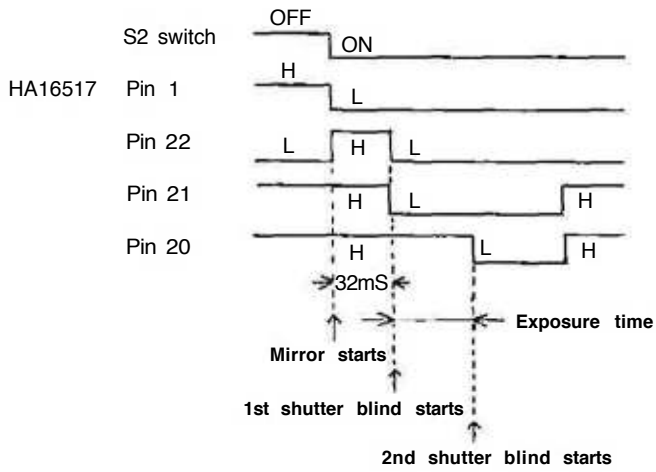
NOTE: When voltage on pin No. 2 is below 0.9V, the shutter will not start. In this case, check the wiring up to the M printed circuit board and the M printed circuit board.

2. Check voltages on pins 20, 21 and 22 of the HA16517, and check the parts, wiring and circuit related to these pins.

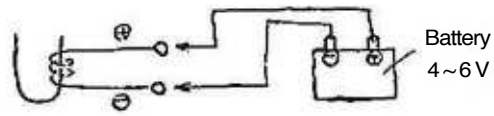
PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
20	2nd shutter blind start signal	When held: 0.7V or more When started: 0.3V or less
21	1st shutter blind start signal	When held: 0.7V or more When started: 0.3V or less
22	Mirror start signal	When started: 0.7V or more Normally 0.3V or less

Relative parts . . . . . α and β magnets, ML magnet and M printed circuit board

NOTE: With S2 turned on = Shutter release button fully depressed

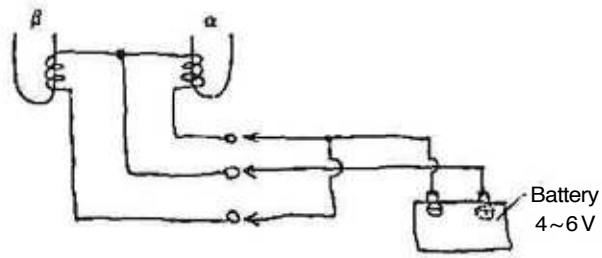


o Method to check ML magnet alone



After winding up the film advance lever, apply voltage across the lead wires of the ML magnet as shown above, and see if the mirror starts or not. When the mirror starts, the condition is normal.

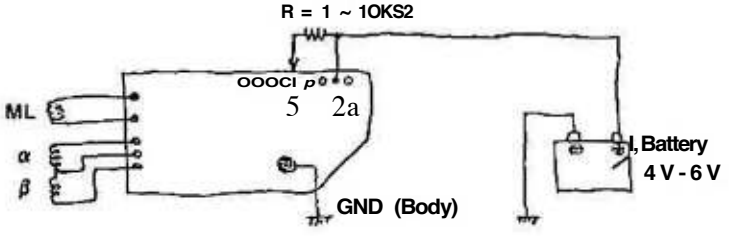
o Method to check α and β magnets



Apply voltage to the lead wires pt the α and β magnets as shown above, and see if the moving contacts are held firmly. When the moving contacts are held firmly, the condition is normal.

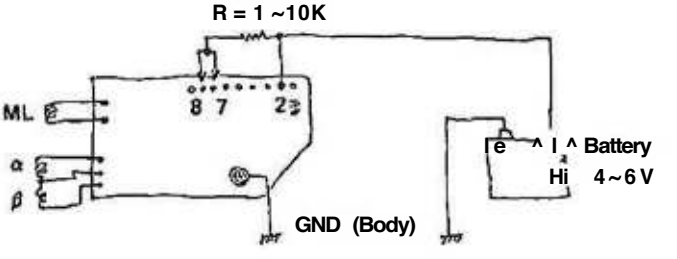
o Method to check M printed circuit board alone

o Checking ML magnet circuit



After winding up the film advance lever, apply voltage to terminals of the M printed circuit board as shown above, and see if the mirror starts or not.
When the mirror starts, the condition is normal.

o Checking *a j* (3 magnet circuit



After winding up the film advance lever, apply voltage to terminals of the M printed board as shown above, and see if the moving contact is held firmly or not.
When the moving contact is held firmly, the condition is normal.

3. When 1 and 2 above are completed but still defective or when it is found to be unrepairable, replace the magnet, M printed circuit board or flexible printed circuit board as applicable with a new one.

Section C

GENERAL: Before proceeding to the following inspections, make sure the flexible printed circuit is connected to the EH - 2 switch correctly, and check the S1 - 2 switch, ST printed circuit board, S3 switch and self - timer switch for their normal operations and set positions.

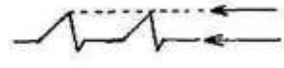
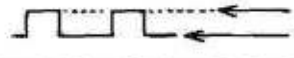
1. Check voltages on pins 5, 7 and 8 of the HA16517, and check the parts, wiring and circuit related to these pins.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
5	Reference voltage input I	2.50 [V]
7	LV, S, F arithmetic operation input	0.9 - 1.8 [V] 1.10 [V] 1.10 {V] . . . . . 1/1000 1.46[V] 1/2 40mV/EV
8	Reference voltage input II	1.06 [V]

Parts related to pins 5 and 8. . . . . E11 - 2 switch, VR1 (10KΩ), C8 (1 μF), C9 (0.1 μF) and CI0 (1000 PF)

Parts related to pin 7. . . . . E11 - 2, VR2 (4.7KΩ), VR4 (1.5KΩ), C3 (0.33 μF), C11 (1 μF), C12 (1 μF), F - potentiometer, Si cell and brush - A.

2. Check voltages on pins 4, 6 and 9 of the HA16517, and check parts, wiring and circuit related to these pins.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
4	A/D converter circuit	Approx. 1.5V
6	A/D converter circuit	 Approx. 2[V] Approx. 1 [V]
9	A/D converter circuit	 Approx. 0.7 [V]

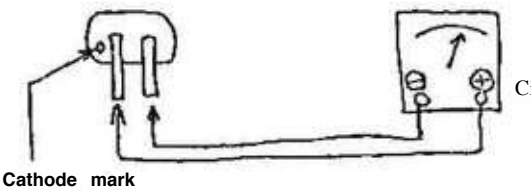
Parts related to pin 4	R29 (75KΩ) and VR5 (15KΩ)
Parts related to pin 6	C12 (0.47 μF)
Parts related to pin 9	C14 (470PF)

3. Check as described in Section B -1 and B - 2 above.
4. When voltage delivered to pin 34 of the HA16517 (circuit power supply) os approximately 4.2V, the LED which has lit at that time Flashes in the rated cycle (4Hz duty 1/2) to display that the battery has a sufficient voltage.
   When the camera is under "Bulb" mode, the LED for 2-4 flashes.
   When the LEDs do not operate correctly for battery checking, make sure that 2.5V is delivered to pin 6 of the HA16517.
5. When 1 through 4 above are completed but still defective or when it is found to be unrepairable, replace the flexible printed circuit board assembly, E11-2 switch, F - potentiometer, Si cell and/or brush - A as applicable with new ones.

   NOTE: Brush - A represents brush for ASA selector.

   Method to check each relative parts alone

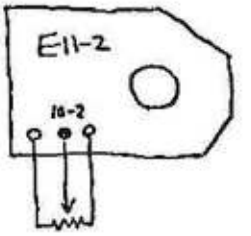
   a. Si cell



Circuit tester
(R range max (XI000})

Connect the Si cell to a circuit tester as shown above, and make sure that resistance is low first. Next, reverse polarity of the tester (exchange (+) and (—) poles) and make sure that resistance is high. Now, under this condition, make the front face of the Si cell bright and dark, and make sure that the pointer deflects accordingly.

b. F - potentiometer



With the F - potentiometer connected to the camera body, make sure that 2.5V is delivered to pin 5 of the HA16517, and check the battery for voltage. Next, turn the focusing ring and make surethat voltage on terminal 10-2 of the E11 - 2 switch varies about 1.0 to 1.8V.
(80 mV/EV; Voltage is lower at F1.4 side)

c. E11 - 2 switch (Check it in the fallowing sequence)
Before proceeding to the following inspections, make sure that the battery is normal, wriing is made correctly and that the E11 - 2 switch os connected to the flexible printed circuit board correctly.

TERMINAL NO. OF E11-2	FUNCTION	VOLTAGE AND OCCURRENCE
8		GND
3	Circuit power supply	Approx. Vcc - 0.5V (4V or highter voltage is required)
6 - 6	Reference voltage I	2-50 [V]
1 0 - 2	F - input	80mV/EV (Use an F1.6/55mm lens) F1.6 . . . . Approx. 1.1 [V] F5.6 . . . . Approx. 1.42 [V] F1.6 . . . . Approx. 1.66 [V]
11	S - input	80mV/EV S25 . . . . Approx. 1.6 [V] S100. . . . Approx. 1.44 [VI S400. . . . Approx. 1.28 [V]
2 3 - 2	Photo Amp output	40mV/EV (Use an F1.6/55mm lens) LV2 . . . . Approx. 0.9 [V] LV11 . . . Approx. 0.54 [V] LV15 . . . Approx. 0.38 [V]
13	LV. S, F arithmetic operation output	1.8 ~ 0.9 [V], 40mV/EV (Voltage varies as LV, S and F are changed) Approximately same as 13
4	Reference voltage II	1.06 [V]
2	V_{sf}	1.3V at F5.6 and S100 set on an F1.6/55mm lens
7 - 3	Self - timer switch	Normally, 0.7V or more When self-timer operates, 0.3V or less

Fig. 81

Front view of E11 - 2 switch

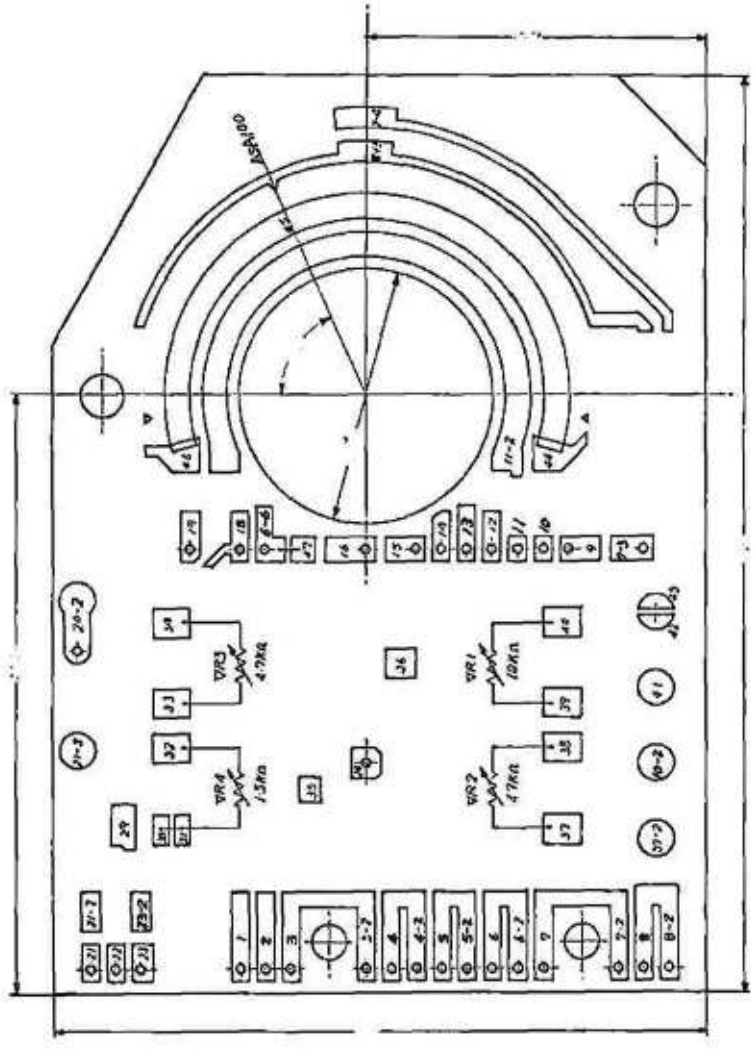
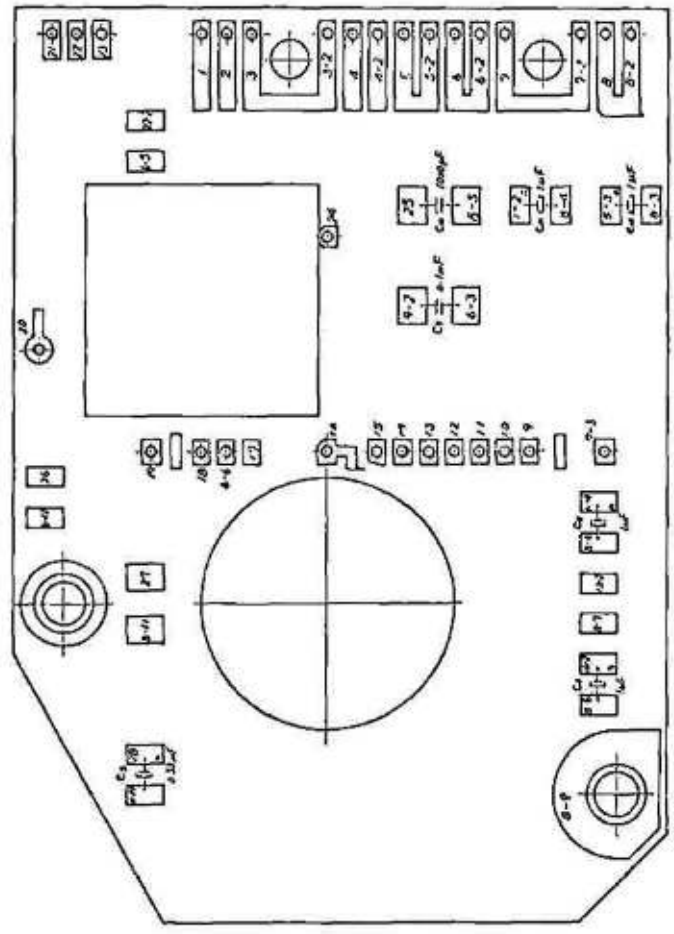


Fig. 82

Back view of E11 - 2 switch



Section D

GENERAL: Before proceeding to the following inspections, make sure that:

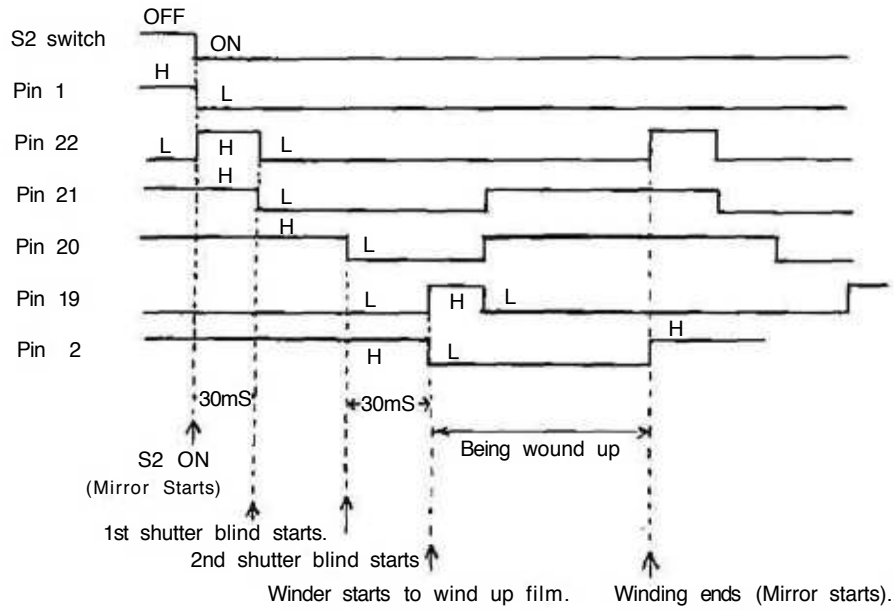
(1) The auto - winder and strobo are connected to the camera correctly.

(2) Check the ST printed circuit board and self-timer switch for the brush contact and set positions.

1. Auto - winder

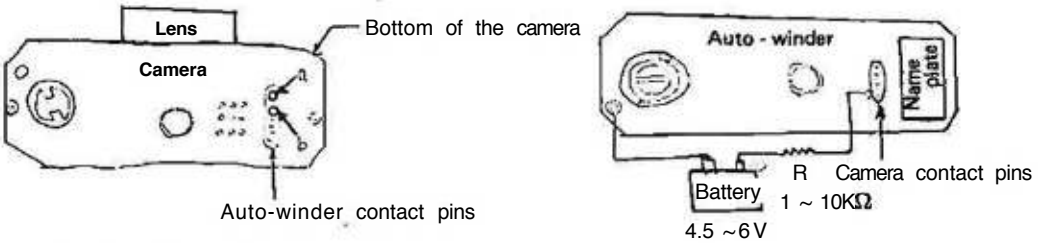
Check voltages on pins 1, 2, 19, 20, 21, and 22 of the HA16517, check the parts, wiring and circuit related to these pins, and check the auto - winder contact pin on the M printed circuit board.

PIN NO.	FOUNCTION	VOLTAGE AND OCCURRENCE
1	Shutter start input	Refer to Section B - 1 .
2	Shutter start input (with auto - winder operated)	⌜L⌟ . . . . 0.9V or less ⌜H⌟ . . . .More than 0.9V Shutter starts at edge of ⌜L⌟ to ⌜H⌟
19	Auto- winder wind - up	L. . . . .0.3V or less H. . . . .0.7V or more ⌜H⌟ is output for 30 msec. when 30 msec. are elapsed after the 2nd blind starting.
20	2nd shutter blind start sginal	Refer to Section B - 2.
21	1st shutter blind start signal	Refer to Section B-2.
22	Mirror start signal	Refer to Section B - 2.



NOTE: During winding up operation, (L) signal is sent to pin 2 from the auto - winder and when (L) signal is on pin 2, the mirror starting is prohibited. As soon *as* the winding is completed, signal is switched over to (H), causing the mirror and shutter to start.

NOTE: When the camera does not operate correctly with an auto-winder combined with the camera, the following simple method may be used to check the camera and auto - winder.



o Checking camera

(1) Make sure that the lowded battery has a sufficient voltage.

(2) Dismount the auto - winder.

(3) Ground the auto - winder contact pin "b" on the camera (connect the contact pin "b" to the camera body) after winding up the film advance lever completely.

(4) Now, depress the shutter releaie button deeply, and make sure that the shutter does not start.

(5) Next, with the shutter release button depressed deeply, unground the contact pin "b" (disconnect the contact pin "b" from the camera body), and make sure that the shutter starts.

o Checking auto - winder

(1) Make sure that the used battery has a sufficient voltage.

(2) Set the switch to "CONT".

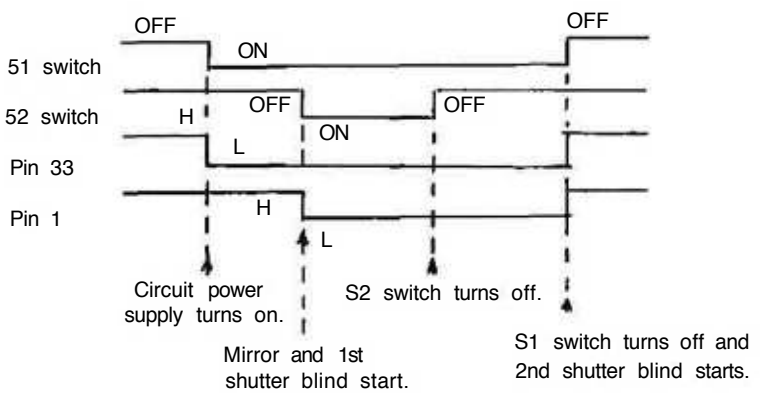
(3) Apply voltage to the auto - winder from an externally located battery as shown above, and make sure that the auto - winder starts. (Be sure to connect a 1 to 10KΩ resistor as shown aobve.)

2. Bulb "B" operation

Check the ST- printed circuit board for the "B" set position first.
Nest, check voltages on pins 1, 24 and 33 of the HA16517, and check the parts, wiring and circuit related to these pins.

PIN NO,	FUNCTION	VOLTAGE AND OCCURRENCE
1	Shutter start input	Refer to Section B - 1.
24	Bulb set input	When setting "Bulb": 0.3V or less; Normally: 0.7V or more
33	Power switch	Refer to Section A - 1 .

Relative parts . . . . . SI - 2 switch, S3 switch, ST - printed circuit board, Tr2, Tr3, R32 (20KΩ), R33 (20KΩ), R34 (20KΩ), and C15 (0.047 μF)



NOTE: With the Tr2 and Tr3 circuit, the mirror and 1st shutter blind start when the S2 switch turns on. The 2nd shutter blind does not start even if the S2 switch turns off, but it starts when the SI switch turns off also.
Thus, the positions of the shutter release button, namely the 1st shutter blind start position and 2nd shutter blind start position, are provided with hysteresis.

3. Self-timer operation

Check the self - timer switch on the E11 - 2 switch assembly first.
Next, check voltages on pins 23 and 25 of the HA16517, and check the parts, wiring and circuit related to these pins.
Further, make sure that the M - printed circuit board and buaaer contact are normal.

PIN NO.	FUNCTION	VOLTAGE AND OCCURRENCE
23	Buzzer signal	When the self-timer is acting, a 2KHz duty 1/4 pulse signal is generated for 12 seconds after the S2 switch turns on.
25	Self-timer set input	When setting self-timer: 0.3V or less Normally: 0.7V or more

When buzzer sound is too loud or whispers, check the 20KΩ resistor on the flexible printed circuit board (located between Trl and pin 23).

4. Flash operation

Check the strobo contact pin and contact first.
Next, check voltage on pin 26 of the HA16517, wiring for this pin and V_{SF} voltage.

PIN NO.	FUNCT1ON	VOLTAGE AND OCCURRENCE
26	Flash set input	When the camera is in flash matic mode and shutter speed is seelcted at 1/60 sec: 0.3V or less Normally: 0.7V or more

6. When 1 through 4 above are completed but still defective or when it is found to be unrepairable, replace the flexible printed circuit board with a new one.

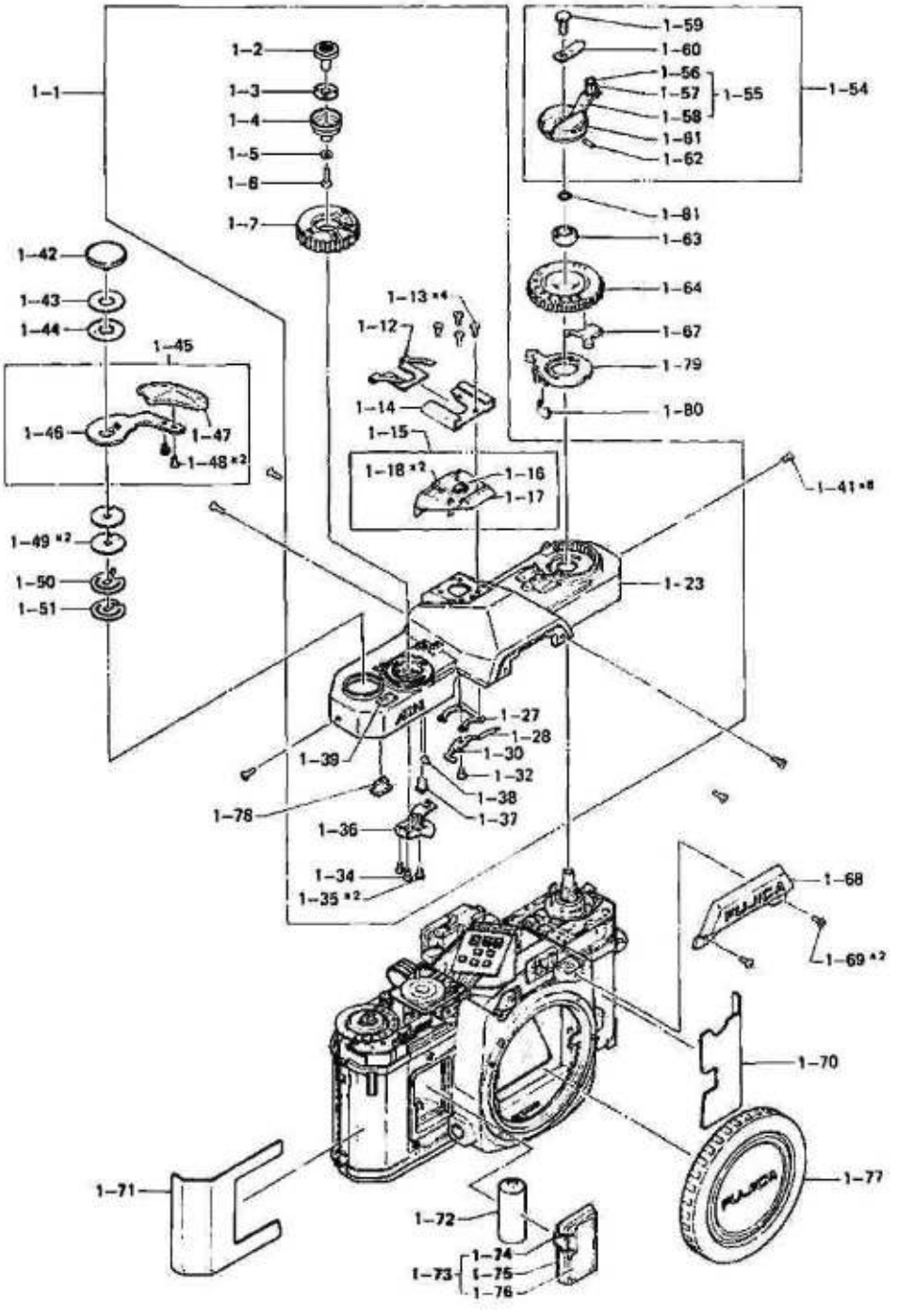
INSPECTION POINT	METHOD OF INSPECTION	REMARKS
1. Electrical system	Apply the rated power (4G13, 544 or 4SR44 battery), and mount an F2.2/55mm lens on the camera.	
1 -1 Power switch (dial)	Make sure that the shutter cannot be released with this switch set to "OFF", and that the shutter can be released with this switch set to "AE", "60" or "S".	
1 - 2 Self - timer lever	Pull out the self - timer lever, and make sure that the self - timer operating sound (intermittent buzzer sound) is generated.	
1-3 LED display in the viewfinder	o Set the shutter speed selector dial to "B". and make sure the no LED lights. o Set the shutter speed selector dial to "60", and make sure that the LED between 60 and 30 lights. o Set the shutter speed selector dial to "AE", and make sure that the appropriate LED lights accordingly in response to the applied brightness. In this case, with the shutter release button depressed in a half way, make sure that the LED display does not vary. (AEL actuates.)	
1-4 Shutter speed	o Set the shutter speed selector dial to "B", and make sure that the shutter opens continuously until the shutter release button is released from the depression. o Set the shutter selector dial to "AE", face the camera to a proper brightness so that the LED between 1000 and 500 flashes in the viewfinder, release the shutter and make sure that there is a proper time lag between the 1st and 2nd shutter blind travelings (an exposure is made).	
1 - 5 Exposure test	Normally, exposure value can be tested by checking position of the shutter speed display LED with the standard light source used. Be sure to conduct exposure test with accurate luminosities applied. The rating is ±1 EV for all exposure values.	

INSPECTION POINT	METHOD OF INSPECTION	REMARKS
2. Parts related to camera body		
2-1 Film advance	o Make sure that the film advance lever can be wound up smoothly. o Make sure that the film advance lever returns with a proper resistance. o Make sure that so called inching can be made when winding up the film advance lever.	
2-2 Film rewind button	Make sure that the sprocketis freed when this button is depressed. Wind up the film advance lever and make sure that the film rewind button resets causing the sprocket to operate.	
2-3 Filming system and film chamber door	o Load a test film, repeat film advancing and make sure that the film can be advanced correctly. Further, make sure that the film can be rewound correctly. o Make sure that the film chamber door can be opened, closed and locked correctly with a Sim loaded. o Make sure that the film chamber door can be installed and removed.	
2-4 Exposure counter	o Close the film chamber door, wind up the film advance lever and make sure that the exposure counter operates normally from "S'\ o Open the film chamber door, and make sure that the exposure counter resets to "S".	
3. Viewfinder		
3-1 Coincidence of infinity	Set the focusing ring of the lens to ∞, look at an object in a long distance, and make sure that the split images are matched. A slight overage is permitted but shortage should never exist.	
3-2 Viewfinder condition	o Make sure that no dust, scar or others which hinder view through the viewfinder exist. o Make sure that the viewfinder frame is positioned correctly and is not deformed.	

INSPECTION POINT	METHOD OF INSPECTION	REMARKS
4. Adaptability of Auto-Winder	o Make sure that Fujica Auto - Winder X can be installed correctly. o Make sure that film is advanced one frame by one frame with the Auto - Winder set to "S" and that film is advanced sucessively with the Auto-Winder set to "C".	
5. Appearance	o The camera should have neat appearance having no scratch, damage, gap between fitted parts, etc. o All the parts should have been installed securely and correctly. o All the parts installed with adhesive should not be peeled off or Boated, and adhesive should have not come out from such parts.	
6. Setting of parts after completing inspection	o Lens: inf. o Shutter: To be released o Battery: Unloaded o Switch dial: OFF o Exposure counter: S	

V PARTS LIST

Fig. 1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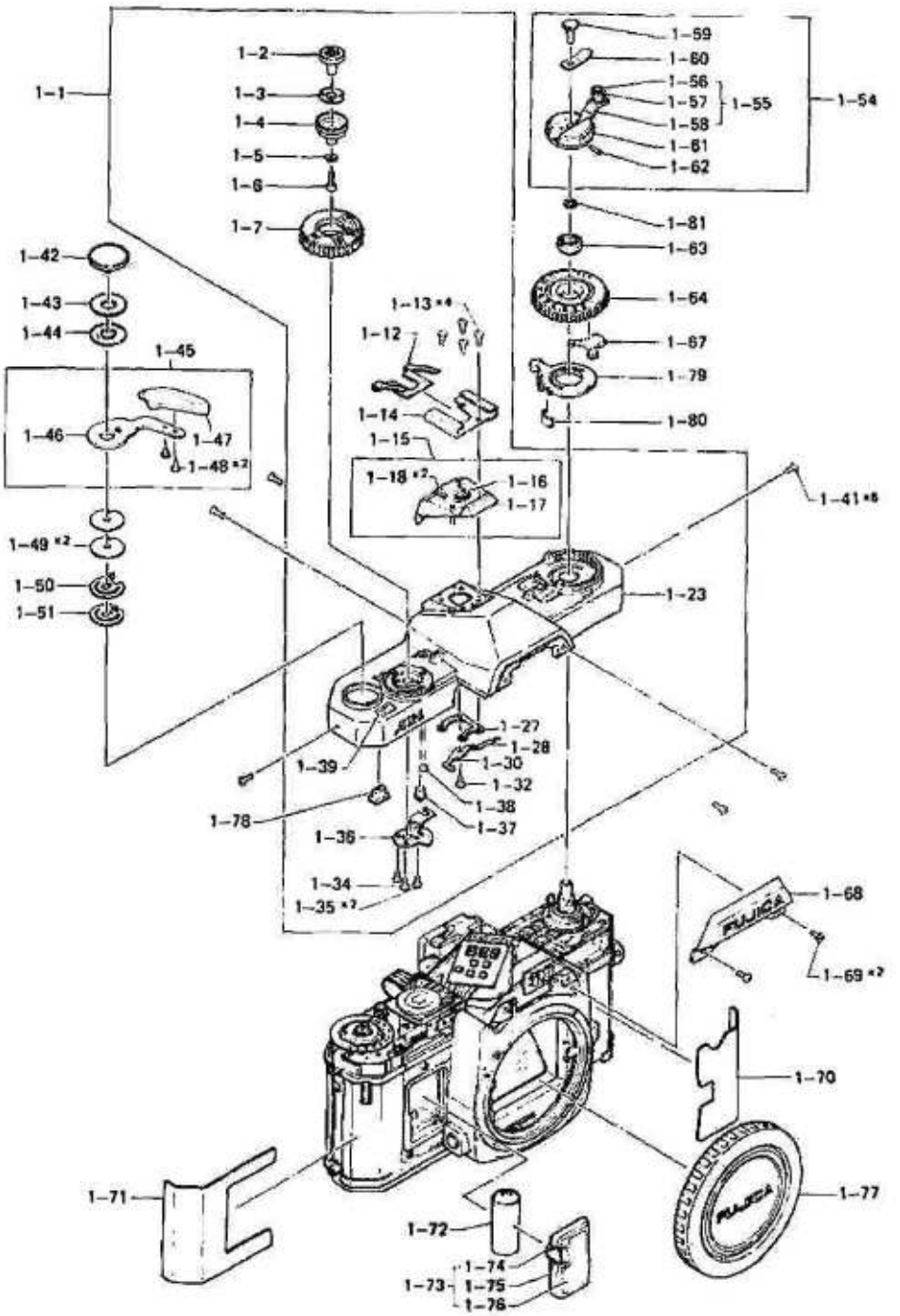
REF NO.	PART NO.	PART NAME	QTY	REMARKS
1- 1	303A2738000	Top cover assembly	1	
1- 2	16B2739060	Shutter release button	1	
1- 3	85B2739050	Lock plate	1	
1- 4	23B2739040	Guide ring	1	
1- 5		Washer	1 ~	
1- 6	32B2738640	Conaecting shaft	I	
1- 7	16B2739030	Shutter dial	1	
1-12	UB2050620	Shoe cover	1	
1-13	111M170501N	Screw	4	
1-14	41B2050610	Accessory shoe	1	
1-15	109A2030640	Contact assembly	1	
1-27	85B2050630	Holder	1	
1-28	230M30007B	Synchro - cord	1	
1-30	111B2739330	Contact piece	1	
1-32	53B93480	Screw	1	
1-34	110M140221S	Screw	1	
1-35	110M170221S	Screw	2	
1-36	50B2739010	Spring plate	1	
1-37	17B2739020	Release pin	1	
1-38	200M24	Steel ball	1	
1-42	53B2054230	Screw	1	
1-43	50B2054240	Washer	1	
1-44	55B2054250	Washer	1	
1-45	47A2034210	Film advance lever assembly	1	
1-49	55B2054260	Adjust washer	1 ~	
1-50	85B2054270	Plate	1	
1-51	85B2738600	Plate	1	
1-54	16A2737710	Film rewind crank assembly	1	
1-55	18A2037120	Film rewind arm assembly	1	
1-59	53B2738730	Screw	1	
1-60	50B2738720	Leaf spring	1	
1-61	16B2738710	Film rewind knob	1	

Fig. 1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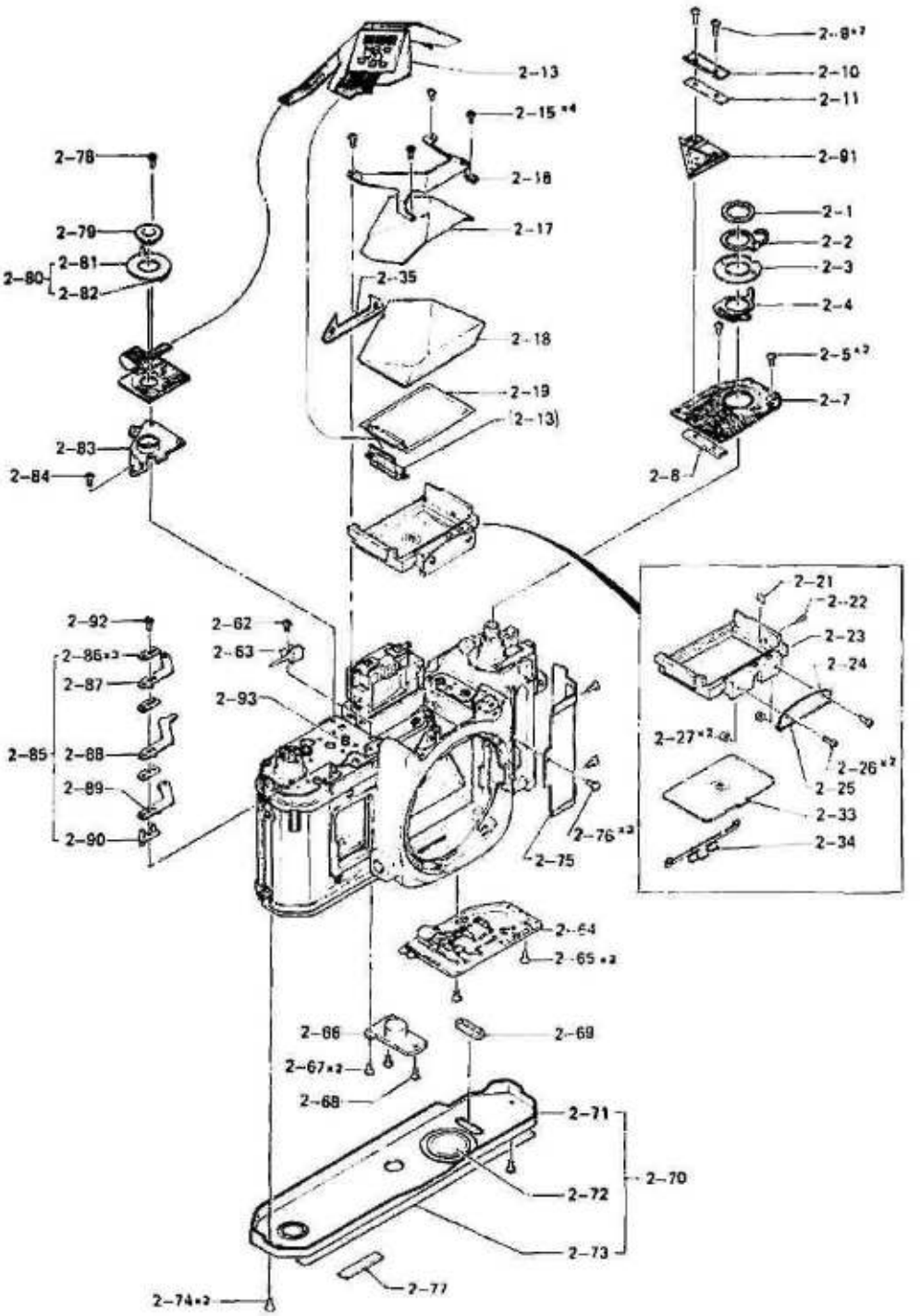
REF NO.	PART NO.	PART NAME	QTY	REMARKS
1-62	32B2057150	Pin	1	
1-63	23B2738700	Holder	1	
1-64	16B2738690	Film speed selector dial	1	
1-67	82B2057080	Lock button	1	
1-68	11B2738660	FUJICA name plate	1	
1 -69	110M170461G	Screw	2	
1-70	59B2054400	Leather	1	
1-71	59B2054410	Leather	1	
1-73	12A2038410	Battery compartment cover assembly	1	
1-76	59B2058440	Leather	1	
1-77	57B2057450	Body cap	1	
1-78	16B2738650	Film rewind button	1	
1-79	47B2738680	Self - timer set lever	1	
1-80	50B2738780	Leaf spring	1	
1-81	95B2059030	Washer	0~	

Fig. 2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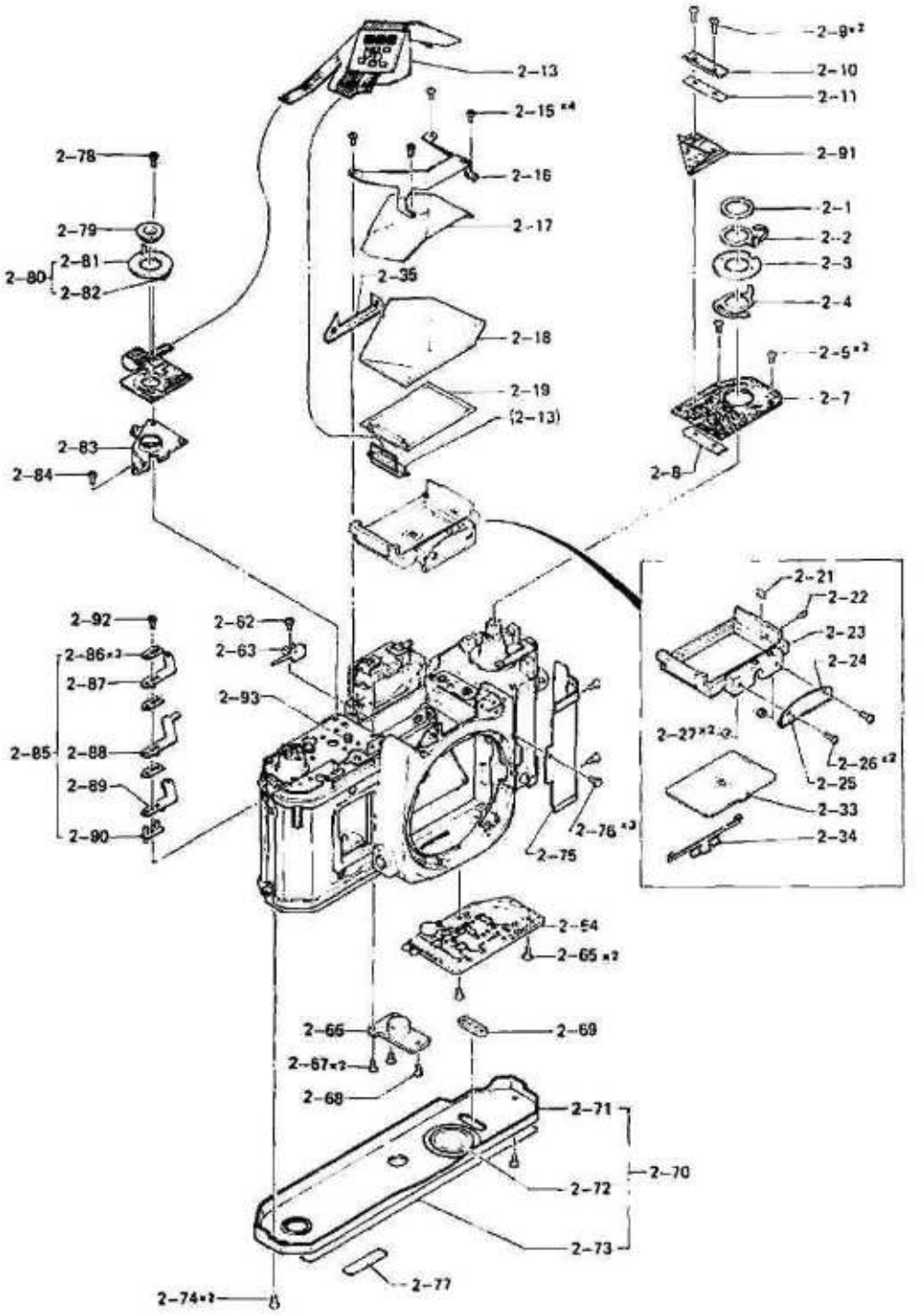
REF NO.	PART NO.	PART NAME	QTY	REMARKS
2- 1	23B2057050	Fix ring	1	
2- 2	109A2037040	S - brush assembly	1	
2- 3	55B2067030	Washer	1	
2- 4	109A2037020	A - brush assembly	1	
2- 6	63K19860	Screw	2	
2- 7	106A2033620	El circuit assembly	1	
2- 8	112B2057360	Channel plate "A"	1	
2- 9	110M140401S	Screw	2	
2-10	112B2057370	Channel plate "B"	1	
2-11	115B2057380	Rubber cushion	1	
2-13	110A2805050	Amplifier assembly	1	
2-15	110M170251S	Screw	4	
2-16	85B2055430	Holder	1	
2-17	11B205544CI	Projection cover	1	
2-18	2B2763980	Penta prism	1	
2-19	20A2737740	Frame assembly	1	
2-21	55B2046830	Protection plate	1	
2-22	120M140015S	Screw	1	
2- 23	12B2040810	Prism case	1	
2-24	68B2738750	Cover plate	1	
2-25	27B2046590	Moquette	1	
2-26	UOM140301S	Screw	2	
2-27	54B99530	Nut	2	
2-33	5B2352610	Focusing screen	1	
2-34	50B2046560	Leaf spring	1	
2-35	27B2046640	Light shielding plate	1	
2-62	110M140253S	Screw	1	
2-63	121A2036030	S3 switch assembly	1	
2-64	110A2805080	M - circuit board assembly	1	
2-65	110M170301N	Screw	2	
2-66	53B2054610	Tripod socket	1	
2-67	111M17O4O1G	Screw	2	

Fig. 2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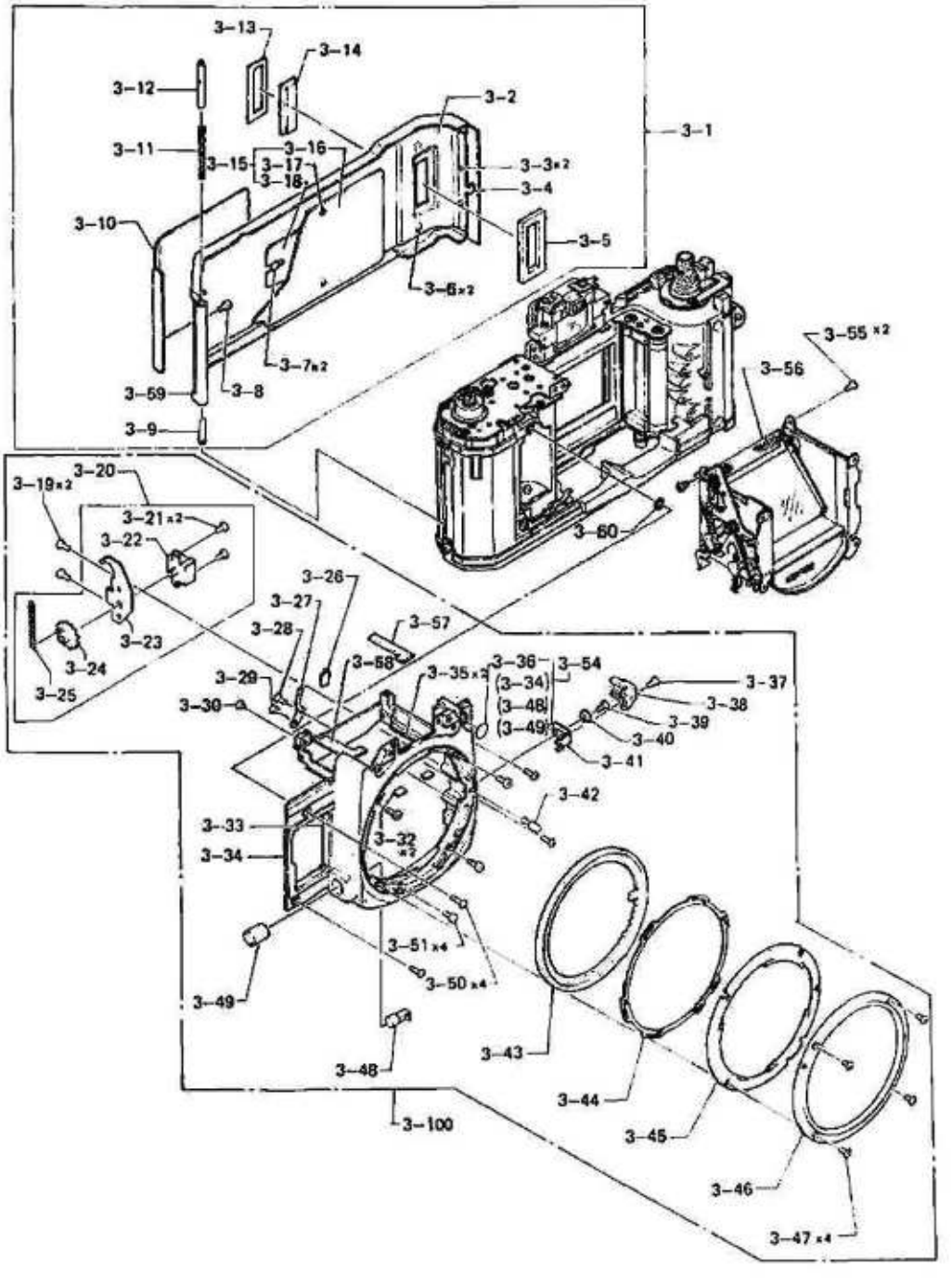
REF NO.	PART NO.	PART NAME	QTY	REMARKS
2-68	111M200401G	Screw	1	
2-69	115B2057410	Insulation plate	1	
2-70	11A2037400	Bottom cover assembly	1	
2-74	H1M170301G	Screw	2	
2-75	84B2044510	Side cover	1	
2-76	111M170301S	Screw	3	
2-77	68B2057490	Number plate	1	
2 -78	U0M17O551N	Screw	1	
2-79	23B2738770	Holder	1	
2-80	115A2737860	Contact base assembly	1	
2-83	81B2738870	Base	1	
2-84	110M140303S	Screw	1	
2-86	121A2738590	S1 - S2 switch assembly	1	
2-91	110B2806130	Printed circuit board	1	
2-92	110M170351S	Screw	1	
2-93	51B2739300	Cushion	1	

Fig. 3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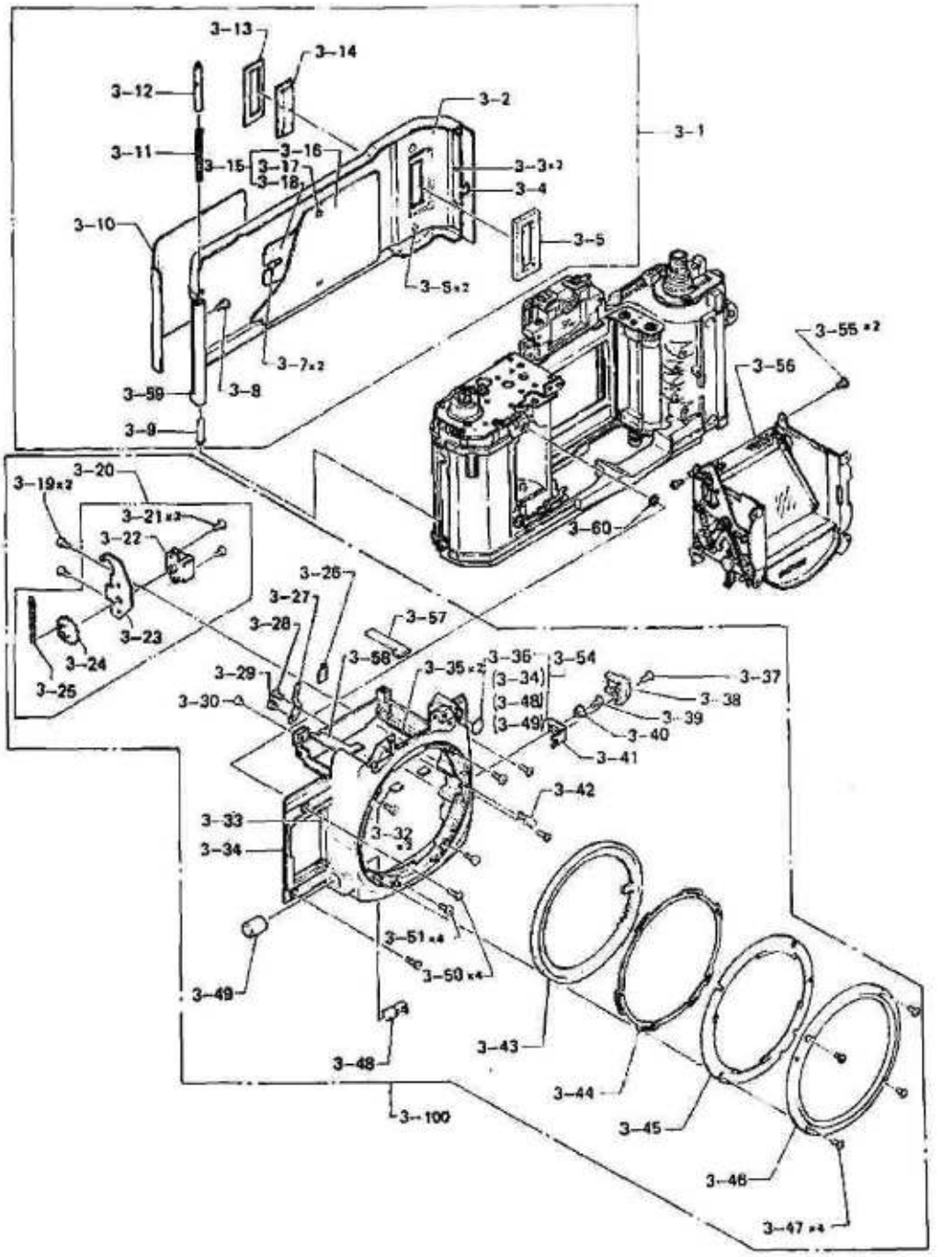
REF NO.	PART NO.	PART NAME	QTY	REMARKS
3- 1	302A2032000	Film chamber door assembly	1	
3- 5	27B2052130	Moquette	1	
3- 8	53B2052100	Screw	1	
3- 9	17B2052070	Pin	1	
3-10	59B2052120	Leather	1	
3-11	50B2052080	Spring	1	
3-12	17B2052090	Moving pin	1	
3-15	44A2032110	Pressure plate assembly	1	
3-19	110M170301S	Screw	2	
3-20	41A2025800	F • value resistor assembly	1	
3-21	110M1401018	Screw	2	
3-26	27B2045730	Light shielding paper	1	
3-27	50B2045680	Leaf spring	1	
3-28	110M170201S	Screw	1	
3-29	110M200201S	Screw	1	
3-30	53B2045860	Screw	1	
3-32	27B2046800	Moquette	2	
3-33	27B2046010	Moquette	1	
3-35	27B2361730	Moquette	2	
3-37	53B2045720	Screw	1	
3-38	16B2045690	Lock - release button	1	
3-39	111M170351S	Screw	1	
3-40	31B2045710	Collar	1	
3-41	85B2045670	Release lever	1	
3-42	17B2045660	Lock pin	1	
3-13	23B2045630	Aperture transmission ring	1	
3-44	50B2045620	Leaf spring	1	
3-45	85B2045610	Claw ring	1	
3-46	23B2456910	Mount ring	1	
3-47	110M200501G	Screw	4	
3-50	110M200501S	Screw	4	
3-61	110M170351S	Screw	4	

Fig. 3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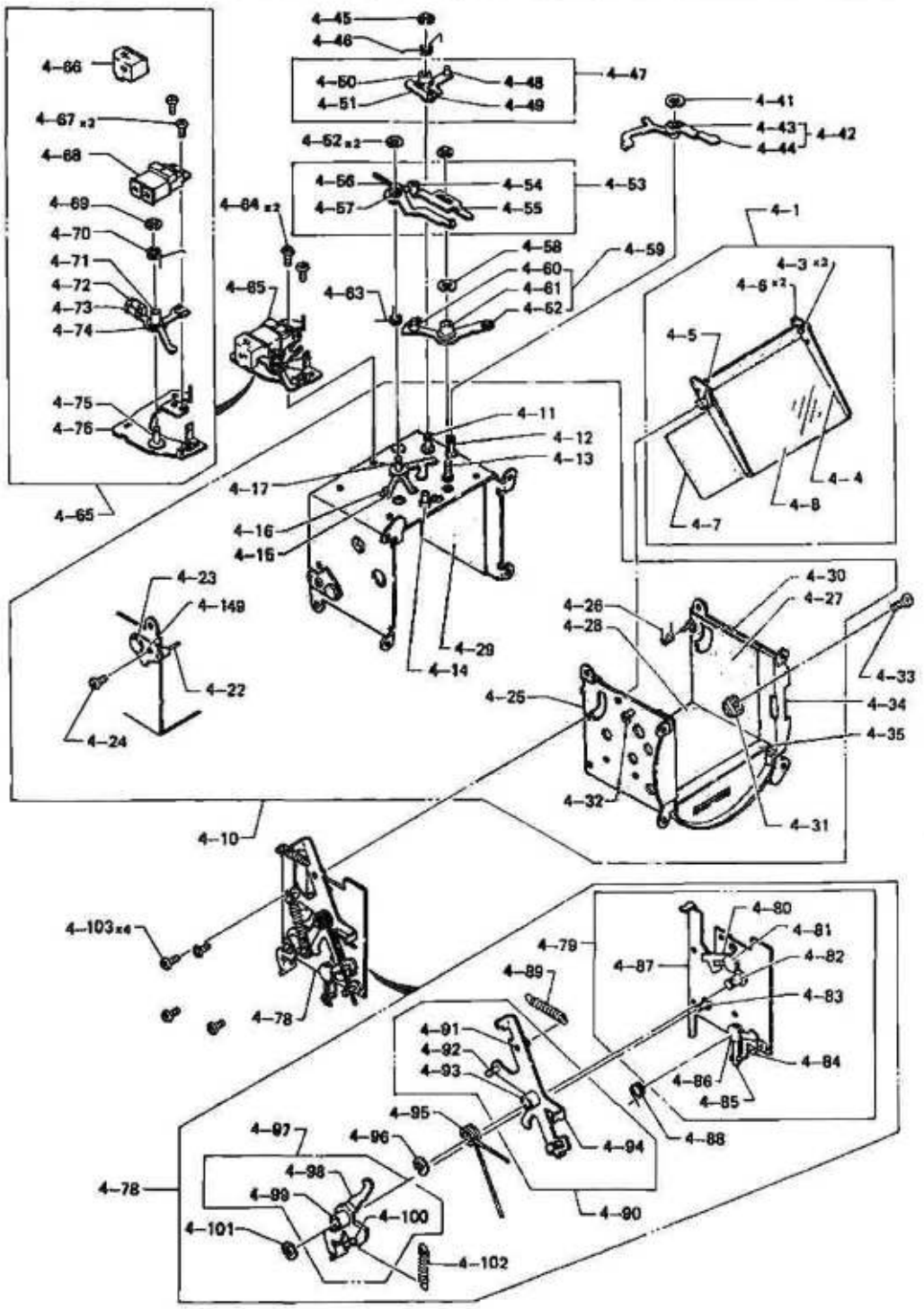
REF NO.	PART NO.	PART NAME	QTY	REMARKS
3-54	10A2025510	Lens mount base assembly	1	
3-55	110M170251S	Screw	2	
3-56	27B2045770	Curtain	1	
3-57	55B2046720	Adjust washer (t»0.02)	0~	
	55B2046730	Adjust washer (t=0.06)	0 ~	
	55B2046740	Adjust washer (t=0.1)	0 ~	
	55B2046750	Adjust washer (t=0.2)	0~	
	55B2046760	Adjust washer (t=0.4)	0 ~	
	55B2046770	Adjust washer (t=0.5)	0 ~	
3-58	55B2046660	Adjust washer (t=0.02)	0~	
	55B2046670	Adjust washer (t=0.05)	0~	
	55B2046680	Adjust washer (t=0.1)	0 ~	
	55B2046690	Adjust washer (t=0.2)	0 ~	
	55B2046700	Adjust washer (t=0.4)	0 ~	
	55B2046710	Adjust washer (t=0.5)	0 ~	
3-59	11B2052010	Film chamber door	1	
3-60	55B95280	Washer (t=0.02)	0~	
	167M23005	Washer (t=0.05)	0 ~	
	65B95390	Washer (t=0.03)	0 ~	
3-100	304A2737900	Mount assembly	1	

Fig. 4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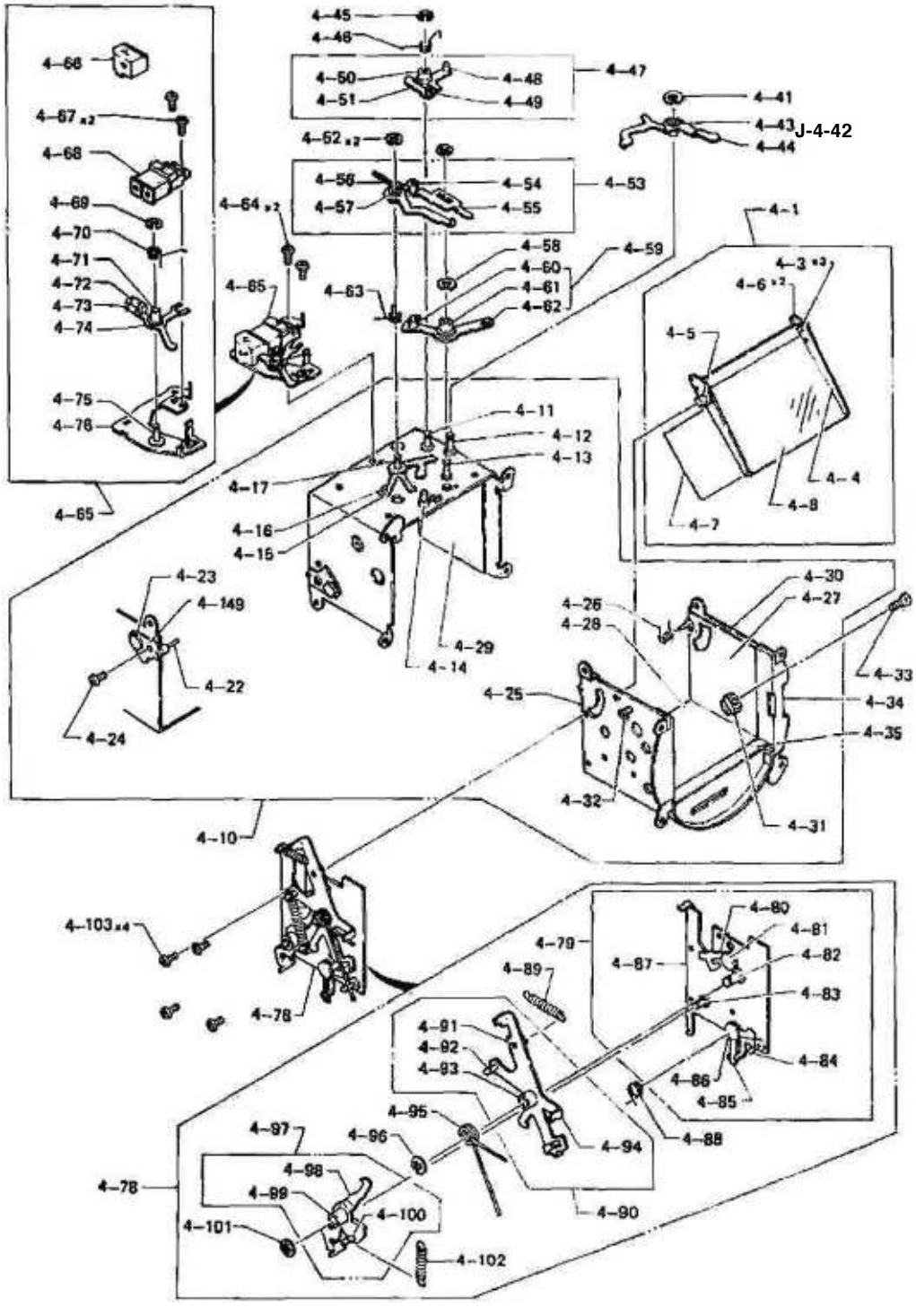
REF NO.	PART NO.	PART NAME	QTY	REMARKS
4- 1	3A2738240	Minor assembly	1	
4- 7	27B2360990	Velvet	1	
4- 8	3B2763990	Mirror	1	
4-10	11A2453250	Mirror case assembly	1	
4-24	110M170141S	Screw	1	
4-26	60B2360890	Spring	1	
4-27	27B2360910	Velvet	1	
4-28	27B2360930	Velvet	1	
4-29	27B2360920	Velvet	1	
4-33	111M140501S	Screw	1	
4-34	11B236080O	Cover	1	
4-35	27B2046000	Velvet	1	
4-41	191M012T	E -clip	1	
4-42	47A2453540	Lever assembly	1	
4-4S	191M012T	E - clip	1	
4-46	5OB2458&10	Spring	1	
4-47	47A2453470	Lever assembly	1	
4-52	191M012T	E -clip	2	
4-53	47A24G338O	Lever assembly	1	
4-58	191M012T	E-clip	1	
4-59	47A24 53350	Lever assembly	1	
4-63	50B2458430	Spring	1	
4-64	110M170141S	Screw	2	
4-65	41A2453630	Magnet assembly	1	
4-66	11B2458630	Cover	1	
4-77		Washer	1	
4-78	46A2452900	Base plate assembly	1	
4-79	46A2453910	Base plate assembly	1	
4-88	50B2457980	Spring	1	
4-89	50B2468070	Spring	1	
4-90	47A2453030	Quick return charge lever assembly	1	
4-95	50B2458080	Spring	1	

Fig. 4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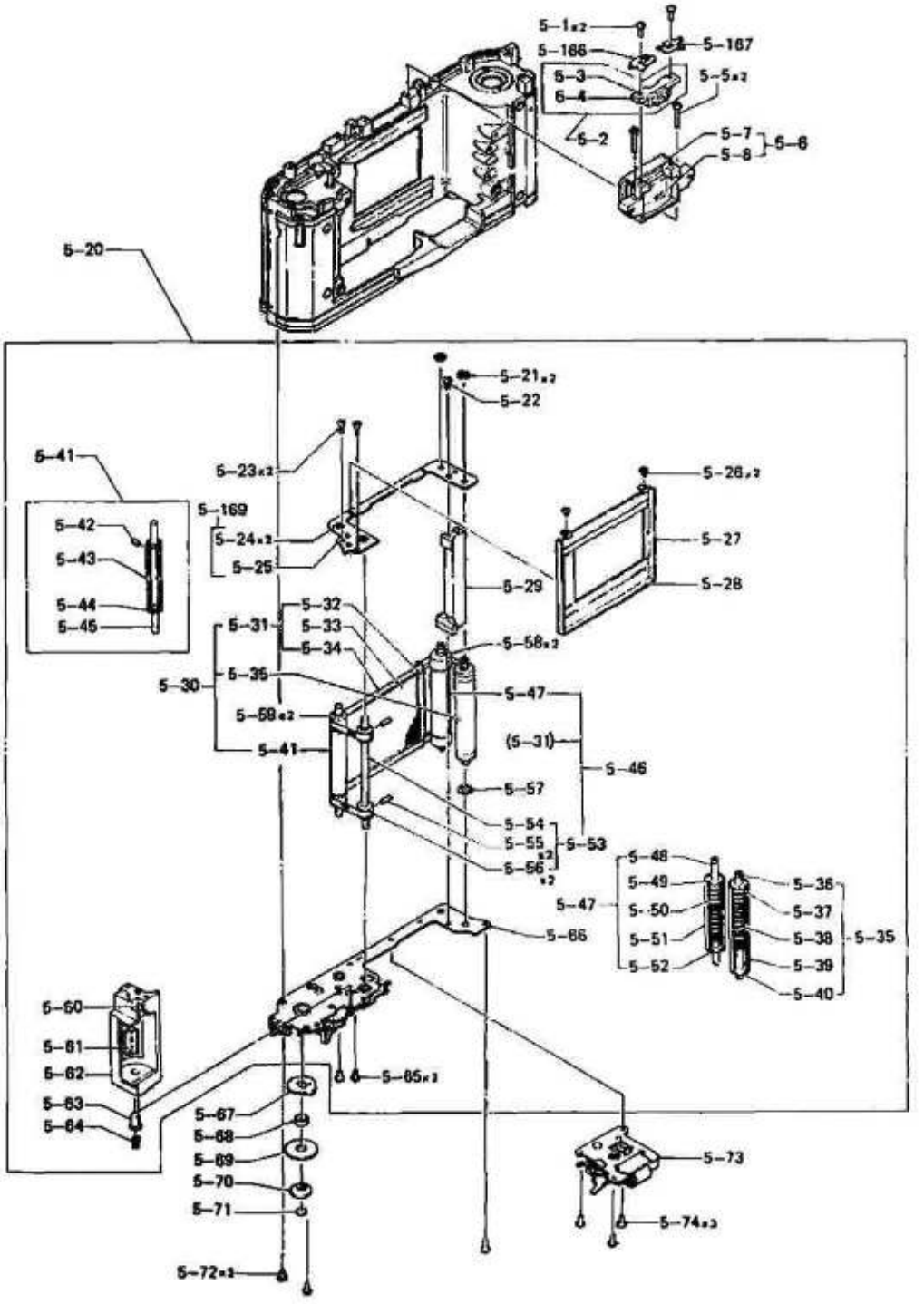
REF NO.	PART NO.	PART NAME	QTY	REMARKS
4-96	191M015T	E - clip	1	
4-97	47A2453120	Lever assembly	1	
4-101	191M012T	E - clip	1	
4-102	50B2458090	Spring	1	
4-103	110M170141S	Screw	4	

Fig. 5-1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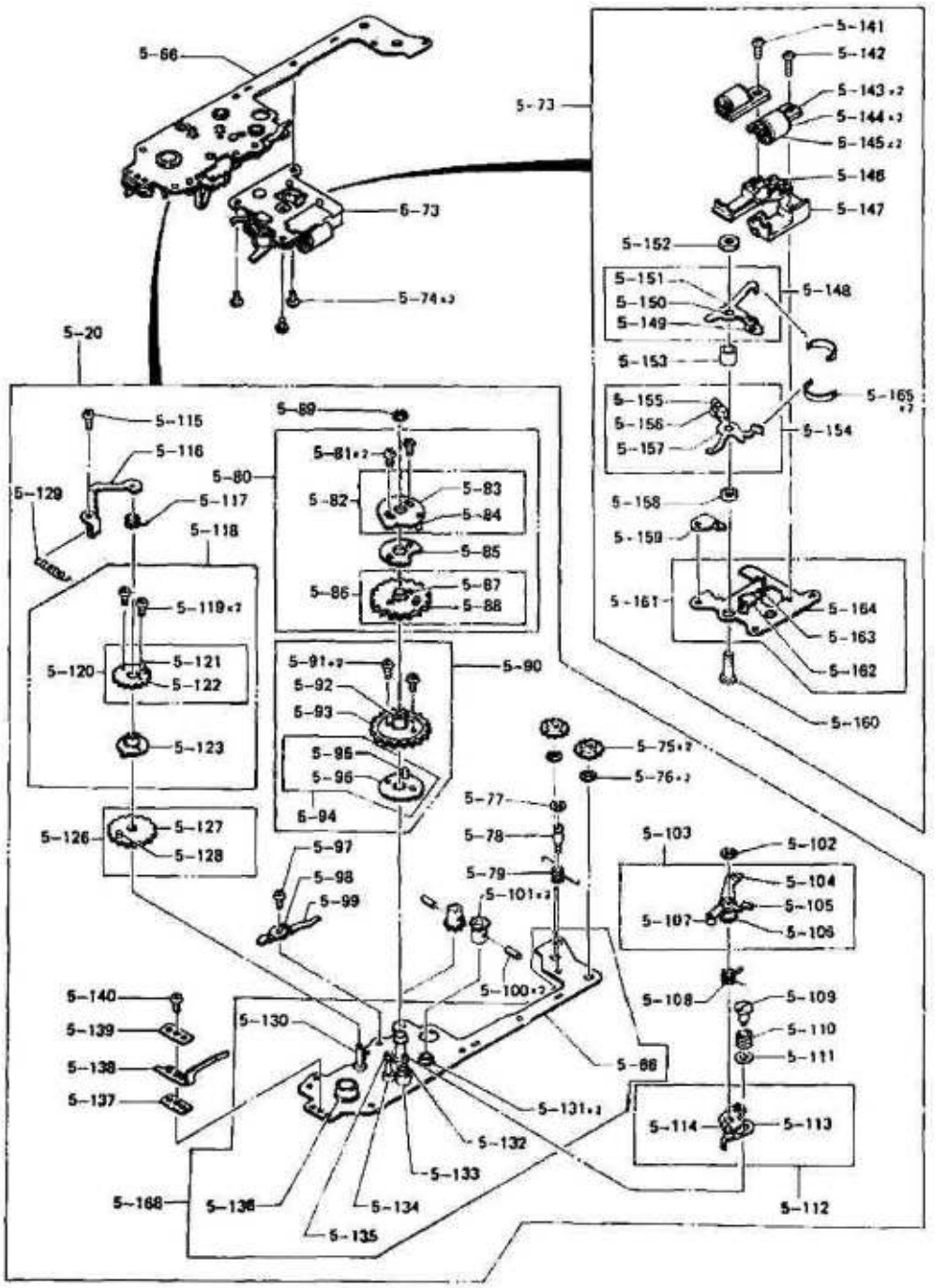
REF NO.	PART NO.	PART NAME	QTY	REMARKS
5- 1	113M170501S	Screw	2	
5- 2	106A2037290	Photocell assembly	1	
5- 5	110M170951S	Screw	2	
5- 6	12A2737600	Eyepiece assembly	1	
5-20	305A2021500	Focal plane shutter assembly	1	
5-21	191M015T	E - clip	2	
5-22	113M170501S	Screw	1	
5-23	114M170501S	Screw	2	
5-26	110M140121S	Screw	2	
5-27	27B2041810	Light shielding plate	1	
5-28	27B2042040	Moquette	1	
5-29	13B2041760	Column	1	
5-30	38A2021630	2nd shutter blind assembly	1	
5-46	38A2021620	1st shutter blind assembly	1	
5-57	55B99240	Washer	1	
5-58	37B2041710	Roller (L)	2	
5-59	37B2041700	Roller (S)	2	
5-60	109B2041740	Contact piece	1	
5-61	5B2042300	Battery label	1	
5-62	13B2041720	Battery compartment	1	
5-63	109B2042280	Contact point	1	
5-64	50B2042290	Spring	1	
5-65	114M170501S	Screw	2	
5-67	34B2054000	Notched gear	1	
5-68	42B2054010	Collar	1	
5-69	60B2054030	Seat plate	1	
5-70	33B2054040	Clutch	1	
5-71	58B2054050	Cover plate	1	
5-72	110M200301S	Screw	3	
5-73	46A2022710	Magnet assembly	1	
5-74	110M140151S	Screw	3	
5-75	34B2041800	Ratchet gear	2	

Fig. 5-2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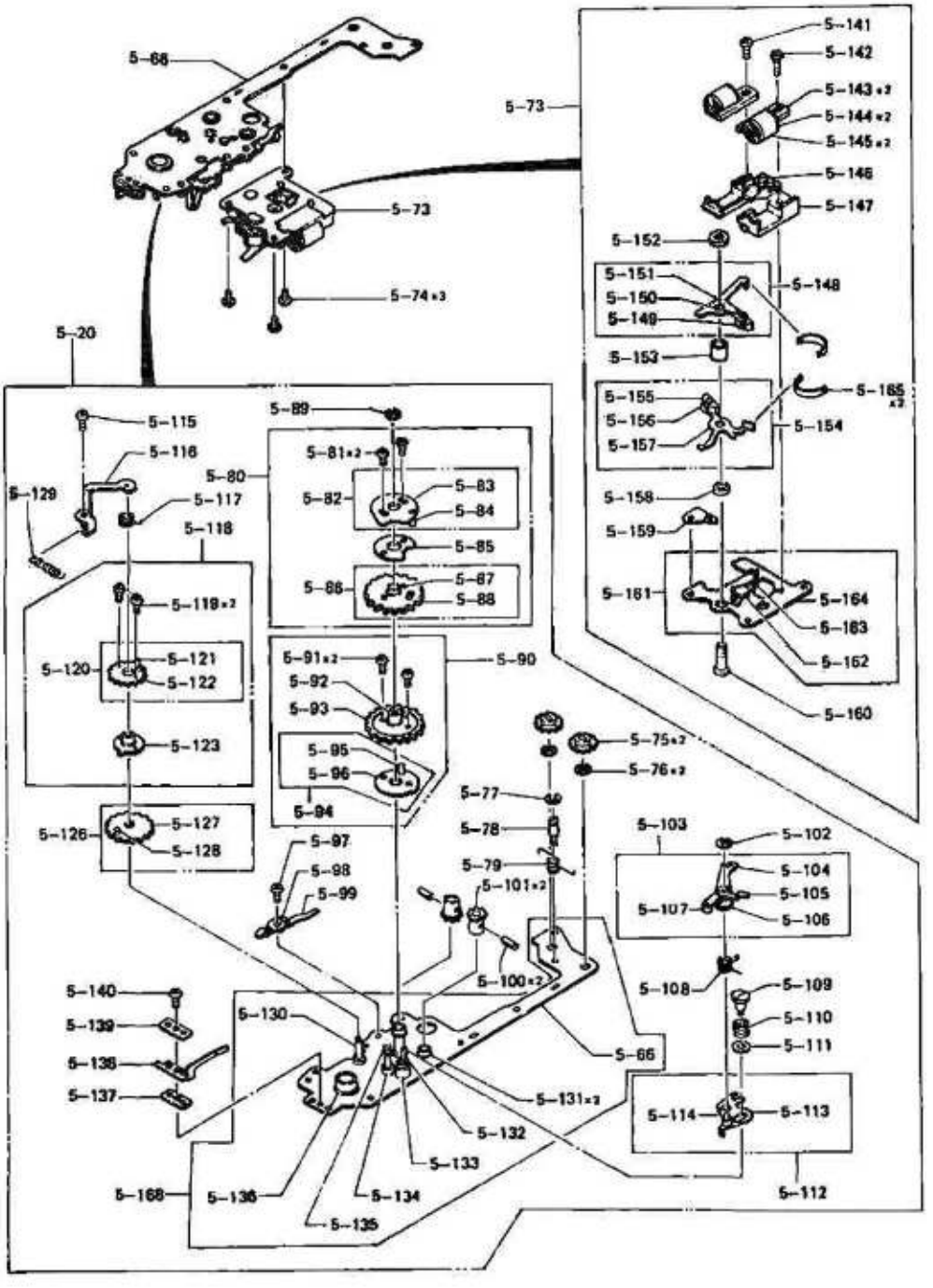
5-76	191M015T	E-clip	2	
5-77	191M020H	E -clip	1	
5-78	53B2041790	Screw	1	
5-79	50B2041780	Click spring	1	
5-80	34A2021910	2nd shutter blind gear assembly	1	
5-81	110M140221S	Screw	2	
5-82	35A2021930	Cam plate assembly	1	
5-85	24B2041920	Spacer	1	
5-86	34A2021900	Gear assembly	1	
5-89	191M015T	E - clip	1	
5-90	34A2021850	1st shutter blind gear assembly	1	
5-94	45A2021820	Cam assembly	1	
5-97	110M170201S	Screw	1	
5-98	42B2042210	Collar	1	
5-99	47B2042200	Release lever	1	
5-100	182M100401T	Spring pin	2	
5-101	34B126560	Gear	2	
5-102	191M015T	E - clip	1	
5-103	47A2022220	Synchro - lever assembly	1	
5-108	50B2042260	Spring	1	
5-109	53B99180	Screw	1	
5-110	50B2041880	Spring	1	
5-111	55B99160	Washer	1	
5-112	47A2021860	Stop lever assembly	1	
5-115	110M170181S	Screw	1	
5-116	87B2042010	Arm lever	1	
5-117	50B2042020	Spring	1	
5-118	34A2022000	Clutch gear assembly	1	
5-119	110M140201S	Screw	2	
5-120	34A2021990	Gear base assembly	1	
5-123	32B2041980	Sleeve	1	
5-126	34A2021960	Intermediate gear assembly	1	

Fig. 5-2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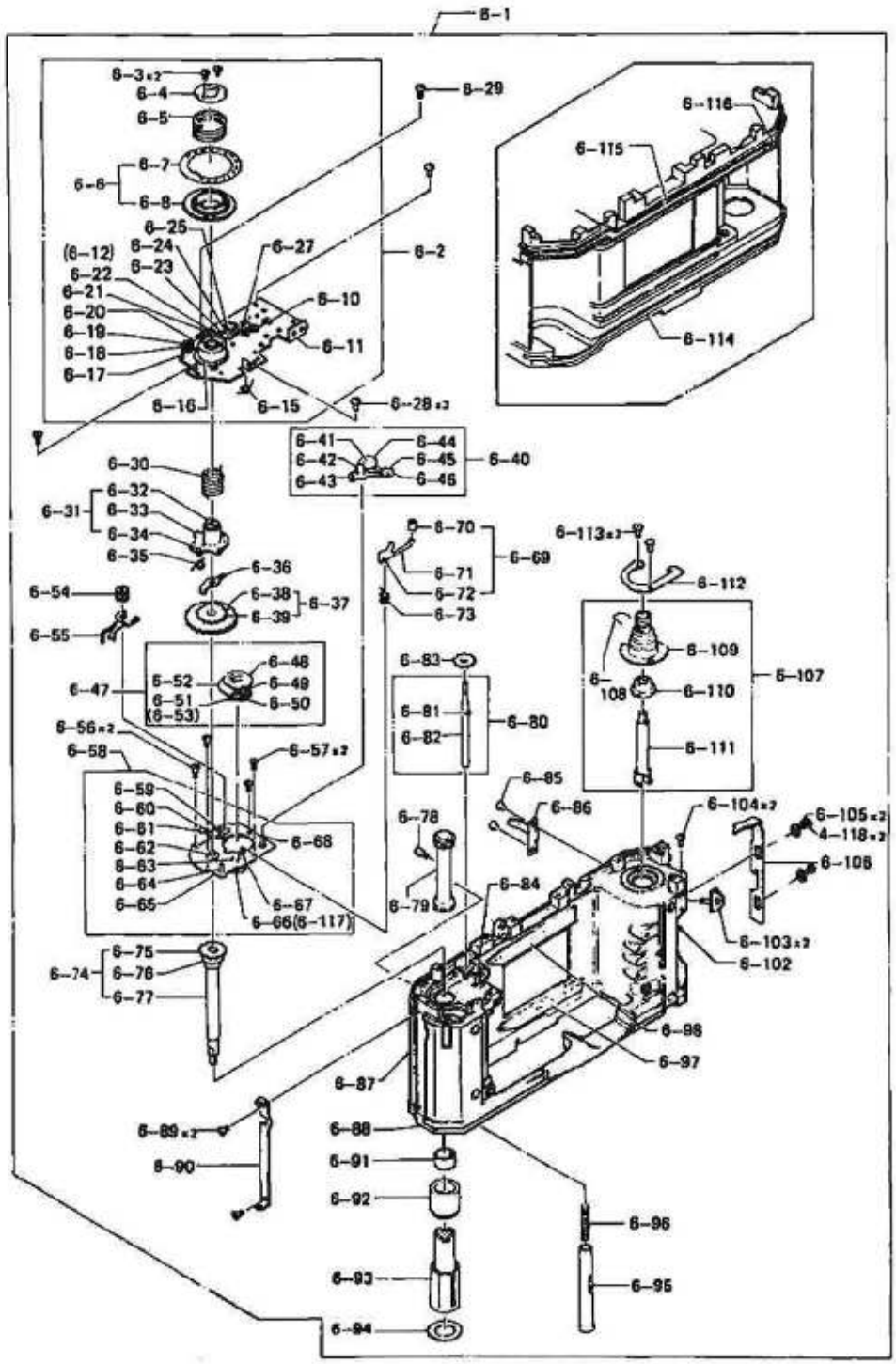
REF NO.	PART NO.	PART NAME	QTY	REMARKS
5-129	50B99660	Spring	1	
5-137	115B99680	Insulation plate	1	
5-138	109B2042030	Contact piece	1	
5-139	115B99680	Insulation plate	1	
5-140	110M140303S	Screw	1	
5-166	109B2057280	Contact piece	1	
5-167	109B2057270	Contact piece	1	

Fig. 6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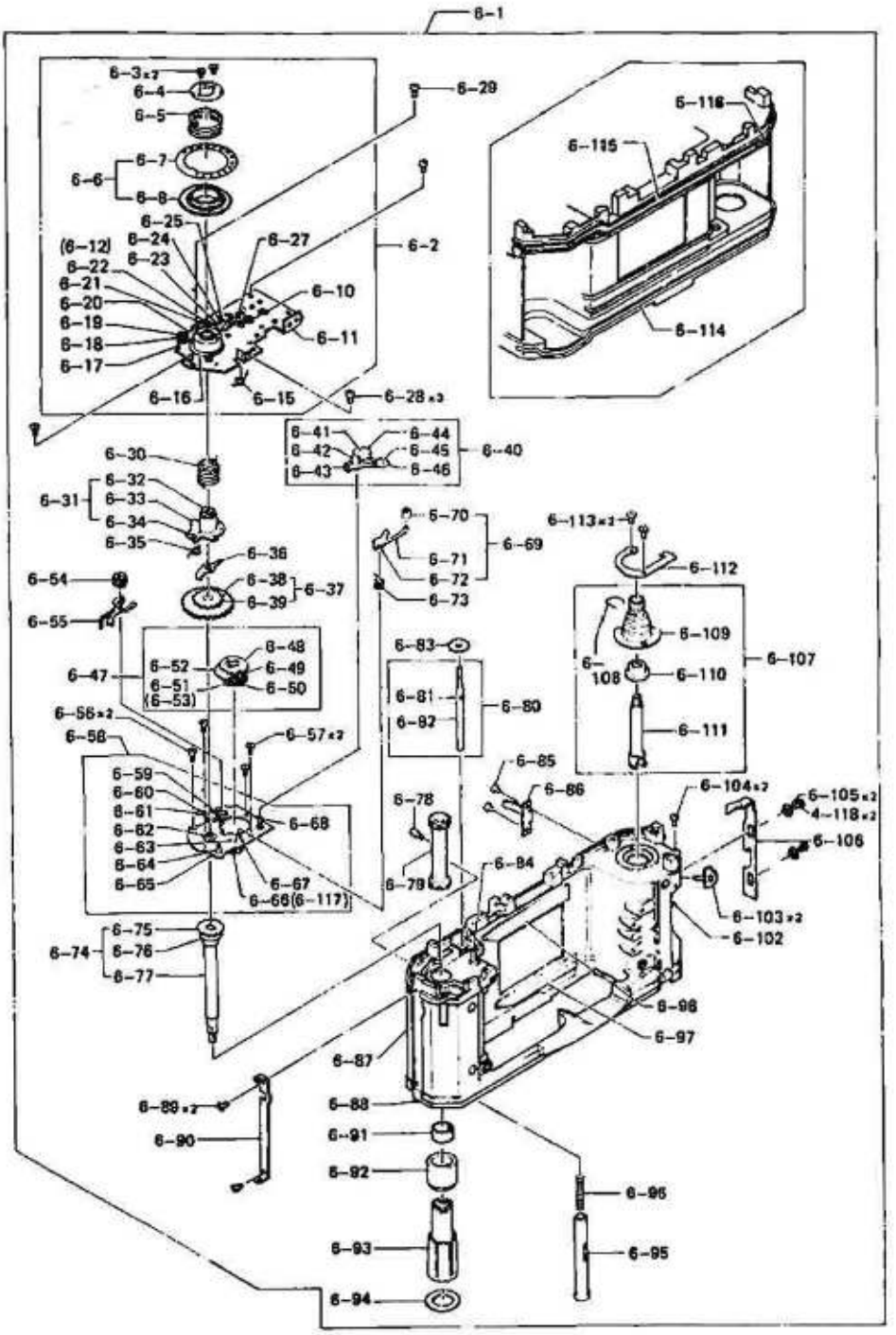
REF NO.	PART NO.	PART NAME	QTY	REMARKS
6- 1	301A2737800	Camera body assembly	1	
6- 2	46A2737830	Base plate assembly	1	
6- 3	110M140101S	Screw	2	
6- 4	85B2045320	Holder	1	
6- 5	50B2045310	Spring	1	
6- 6	34A2025300	Gear assembly	1	
6- 7	65B2045330	Dial plate	1	
6- 8	34B2045300	Gear	1	
6-28	110M170301S	Screw	3	
6-29	111M170301S	Screw	1	
6-30	50B2043720	Spring	1	
6-31	47A2737890	Square hole plate assembly	1	
6-35	60B2043700	Spring	1	
6-36	47B2043690	Lever	1	
6-37	34A2023620	Ratchet wheel assembly	1	
6-40	47A2023370	Charge lever assembly	1	
6-47	34A2023490	Gear assembly	1	
6-54	34B2043210	Gear	1	
6-55	50B2043900	Release lever	1	
6-56	111M170351S	Screw	2	
6-57	110M170351S	Screw	2	
6-58	46A2023250	Base plate assembly	1	
6-69	47A2023570	Lever assembly	1	
6-73	50B2043600	Spring	1	
6-74	32A2023050	Take - up spindle assembly	1	
6-78	53B2043170	Screw	1	
6-79	34B2043180	Sprocket	1	
6-80	32A2023150	Sprocket shaft assembly	1	
6-83	34B2043200	Gear	1	
6-84	32B2043020	Shaft	1	
6-85	110M170221G	Screw	2	
6-86	50B2044650	Leaf spring	1	

Fig. 6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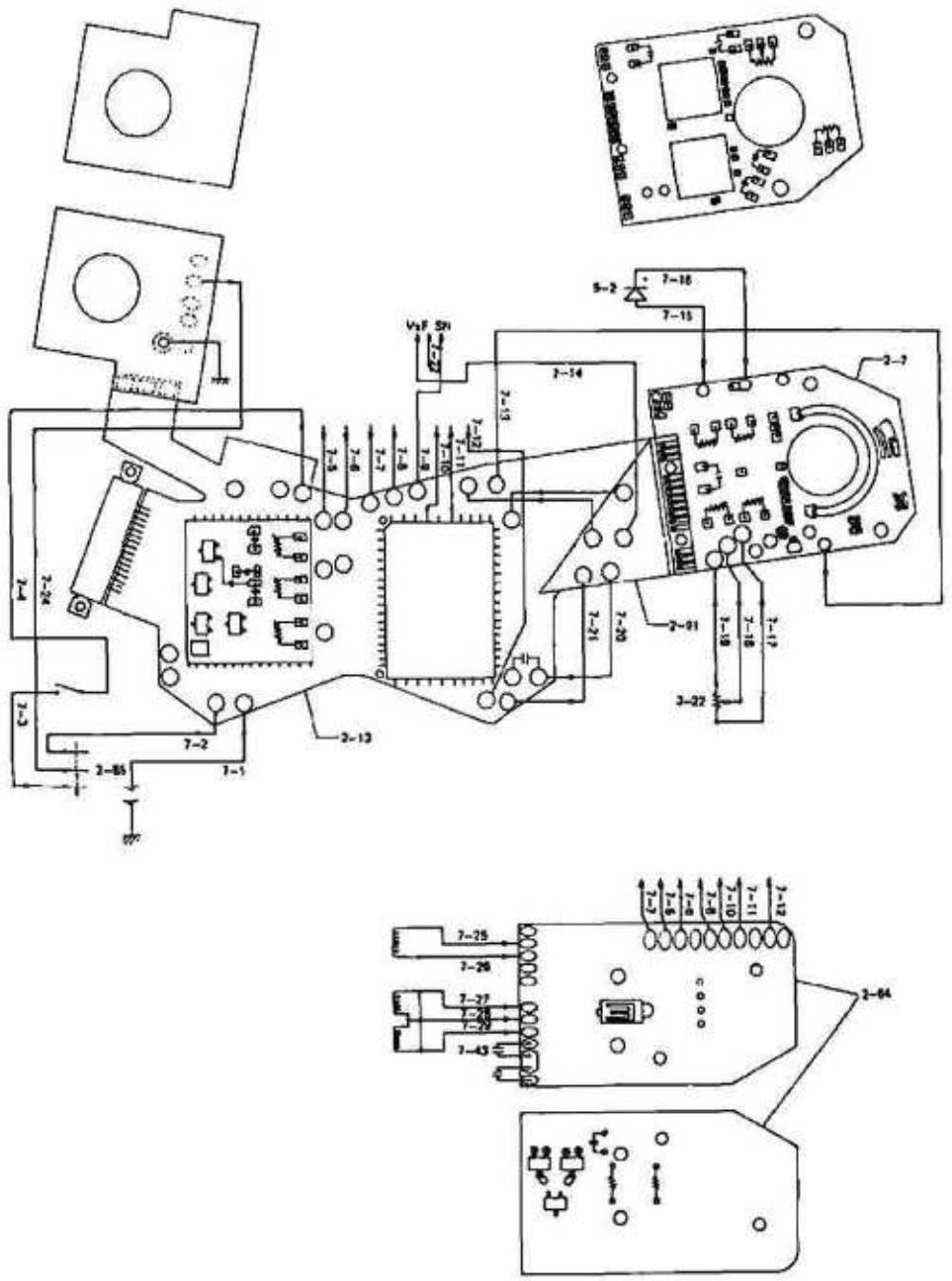
REF NO.	PART NO.	PART NAME	QTY	REMARKS
6-87	27B2045170	Moquette	1	
6-89	111M170251G	Screw	2	
6-90	19B2045130	Hinge support	1	
6-91	50B204S120	Friction ring	1	
6-92	23B20431C0	Collar	1	
6-S3	37B2043090	Spool	1	
6-94	55B2043130	Washer	1	
6-95	32B2043220	Sprocket shaft	1	
6-96	50B204323O	Spring	1	
6-97	27B2044570	Light shielding plate	1	
6-98	27B2044560	Light shielding plate	1	
6-99	115B2044540	Insulation plate	1	
6-100	109B2044530	Synchro contact	1	
6-101	53619860	Screw	2	
6-102	17B2045140	Pin	1	
6-103	41B2044520	Neck strap eyelet	2	
6-104	110M170701S	Screw	2	
6-105	31B2045120	Screw	2	
6-106	19B2045110	Lock plate	1	
6-107	32A2032550	Rewind spindle assembly	1	
6-108	50B2052560	Click spring	1	
6-109	32B2052550	Sleeve	1	
6-110	27B2052540	Light shielding barrel	1	
6-111	32B2738880	Rewind spindle	1	
6-112	50B2052570	Leaf spring	1	
6-113	110M170351S	Screw	2	
6-114	27B2045150	Moquette	1	
6-115	27B2045160	Moquette	1	
6-116	27B2045180	Moquette	1	

Fig. 7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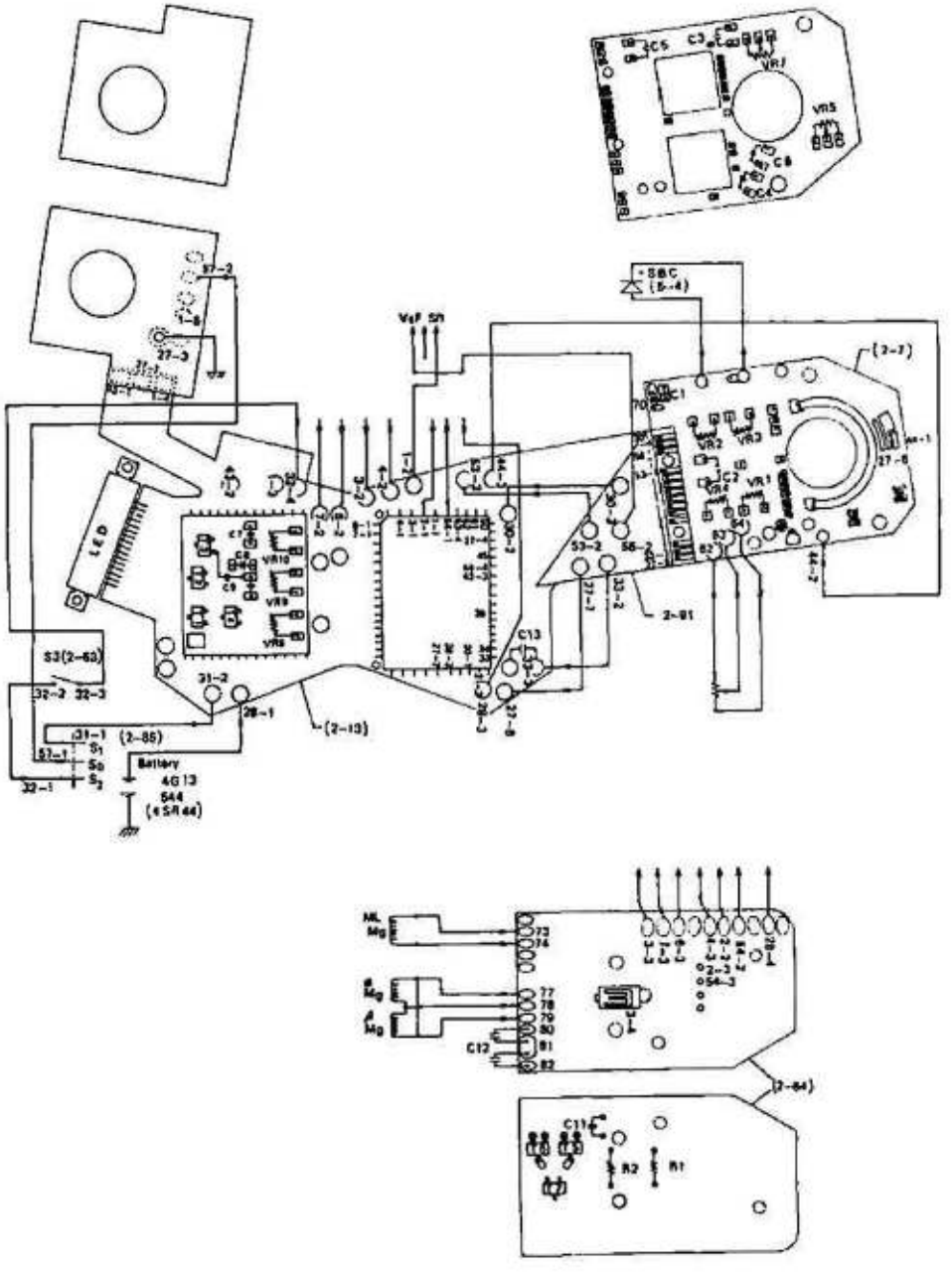
7-27
7-43
2-64

REF NO.	PART NO.	PART NAME	QTY	REMARKS
7- 1	230M05507R	Lead wire (red)	1	
7- 2	230M09007Y	Lead wire (yellow)	1	
7- 3	230M09907G	Lead wire (green)	1	
7- 4	230M04907G	Lead wire (green)	1	
7- 5	230M13007W	Lead wire (white)	1	
7- 6	230M13007H	Lead wire (gray)	1	
7- 7	230M12007G	Lead wire (green)	1	
7- 8	230M11507A	Lead wire (blue)	1	
7- 9	230M02007W	Lead wire (white)	1	
7-10	230M11007W	Lead wire (white)	1	
7-11	230M11007D	Lead wire (orange)	1	
7-12	230M11507R	Lead wire (red)	1	
7-13	230M05507G	Lead wire (green)	1	
7-14	230M02007W	Lead wire (white)	1	
7-15	230M04507W	Lead wire (white)	1	
7-16	230M05007R	Lead wire (red)	1	
7-17	230M05007W	Lead wire (white)	1	
7-18	230M05007D	Lead wire (orange)	1	
7-19	230M05007G	Lead wire (green)	1	
7-20	230M02007A	Lead wire (blue)	1	
7-21	230M02007B	Lead wire (black)	1	
7-22	230M02007D	Lead wire (orange)	1	
7-23	230M02007Y	Lead wire (yellow)	1	
7-24	230M06507A	Lead wire (blue)	1	
7-25	230M02307D	Lead wire (orange)	1	
7-26	230M02307A	Lead wire (blue)	1	
7-27	230M02507W	Lead wire (white)	1	
7-28	230M02507R	Lead wire (red)	1	
7-29	230M02507H	Lead wire (gray)	1	
7-43	116K278600	Capacitor (0.047μF)	0~	
	116K278610	Capacitor (0,068μF)	0 ~	
	116K278620	Capacitor (0.1μF)	0 ~	

Fig. 8


VR1
VR3
C3
C5
C6
C7
C8
C13
VR2
VR10
VR9
LED
S3(2-62)
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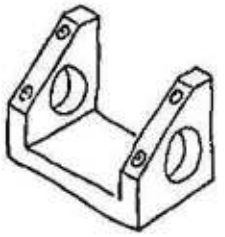
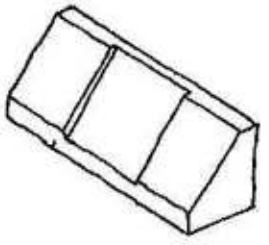
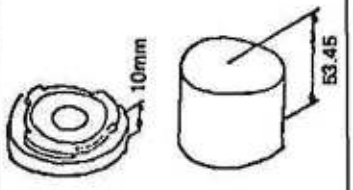
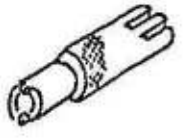
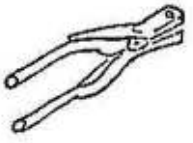
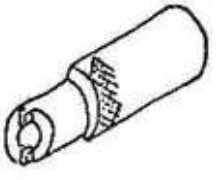
32-2
32-3
32-1
31-1
(2-85)
Battery
4G13
544
(4SR44)
(2-13)
(2-7)
(2-64)
2-91
C12
C11
R1
R2

REF NO.	PART NO.	PART NAME	QTY	REMARKS
	116K278570	Capacitor (0.22μF)	0 ~	
	116K278910	Capacitor (0.33μF)	0~	
	116K278640	Capacitor (0.47μF)	0 ~	

VI SPECIAL REPAIR TOOL LIST

Tool No.	Sketch	Application	Remarks
J10633		For adjustment of 45° mirror angle	Used commonly with AX-5
J971		o To test 45 mirror angle against film rail plane. o Cannot be used for 45° mirror angle adjustment.	Used commonly with AX-5
J972		Adapter and master gauge used for adjustment of flangeback	Used commonly with AX -5
J973		For adjustment of variable resistor	Used commonly with AZ-1 and AX - 5
J10354		o For removal of film rewind knob (1-54) o For removal of nut (1 - 63)	

Tool No.	Sketch	Application	Remarks
JS06		For removal of screw (1 - 42)	Used commonly with ST705W, AZ-1, ST605 and AX-S
P73 - JA1		For removal of focal plane shutter spring pin (5 -100)	Used commonly with ST701, ST801, ST901, ST601, ST606, ST705, ST705W, AZ-1 and
J970		For removal of winder coupler (5 - 70)	Used commonly with AX-5